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MOTOR AGE

Motoring Brings Back the Duster

The New Spring Styles

Announcement of the spring styles for motorists does not show any startling changes, but it does emphasize the revival of the old-fashioned duster, so popular a generation or so back. Motoring apparel necessarily is confined mostly to overcoats and dusters, so the designers do not have a very wide range in planning new things for the motorists.

By C. G. Sinsabaugh

LOOSELY fitting garments, light always and combining the happy faculty of being warm when desired or cool when the sun's rays make it uncomfortable, will have the call among motorists this spring and summer, according to the dictates of the men who make the fashions. No startling changes in the modes are to be discovered. In general the ideas are about the same as prevailed last winter, except, of course, the material has been selected to meet the needs of spring and summer. There is the same demand upon the part of the wearers of motor toggery for coats and wraps that will permit of almost unlimited freedom of movement not only in the operation of the car, but in making any necessary roadside repair. The occupants of the tonneau also demand the same sort of thing and it is evident, from a study of the fashions, that the designers have met the wishes of the consumers.

There are in this country some sixty concerns which specialize in motor tog-

One of the new ideas in collars offered for this year is the Roswell, made by Rosenwald & Weil of Chicago. It is designed to be worn two ways. In warm weather it turns down like a business coat, but in case of dust or a desire to protect the throat it turns up and gives the military effect

Here are two of the new ideas in motoring apparel not in the duster line. One is a comfortable top coat with military collar which is inlaid with velvet and which has slash pockets and other features. The other is along the same line, except the collar is plain. The swagger effect of these coats is added to by the flat-topped caps which are worn. Both are from Rosenwald & Weil

gery, concerns which have made a study of the peculiar needs of those who motor and as a result of the thought given the subject the average American motorist is becomingly togged and comfortable when he is enjoying his outings.

Designers Are Handicapped

In designing clothing for the motorist the designers have been somewhat handicapped in comparison with the cycling days. The wheelmen felt it incumbent to wear a sort of a uniform—knee breeches, light coat, cap and stockings—a badge of the fad. In consequence the maker of clothing had a wide range and there were a thousand and one combinations. Not so with the motorist, though. Your average owner sidesteps the knickers and dodges the idea of a uniform for the reason his pride will not allow him to don the easy garb he once fancied when he rode a bicycle. It's the chauffeur who usually wears the knickers and the modernized edition of the cyclists' garb and your average owner fears he may be classed along with the man who drives for hire.

Because of this the designers of clothing, catering to the owners, have been forced to confine themselves to outer garments as a rule—dusters always and incidentally top coats that can be worn when the weather demands. Therefore the 1911 style book shows offerings in these lines that seem varied enough to suit everyone. Probably the widest range of choice is found among the dusters, for that garment now is regarded as indispensable for motoring purposes and the offerings in these include the cheap linen dusters so popular a decade ago and run up to the balloon silk creations that are affected by some of those who go in for the last word in motor toggery.

Revival of the Duster

Motoring is responsible for Dame Fashion bringing back the old-fashioned duster. It is within the memory of the present

The illustration to the left shows a single-breasted type of duster made by Kling Brothers & Co. of Chicago in linen, cotton chambray, khaki and other material. It is featured by two patch pockets, box collar and padded shoulders. To the right is a neat chauffeur's suit manufactured by Rosenwald & Weil of Chicago

Uniforms for chauffeurs do not differ much in general detail, but the one shown in the accompanying illustration is a tasty garb, the coat having a half-Norfolk effect. The other suit is one that may be worn either by a motor cyclist or an owner who likes the freedom of movement given in wearing knickbockers. The coat is a Norfolk jacket with big patch pockets. The puttees are leather

To the right is a Rosenwald & Weil production in the duster line, the feature of which is the inlaid velvet collar and the double-breasted idea. To the right is another view of the same coat which shows the fancy plaid back which is used. Like others in this line, this is of waterproof material

generation when the farmers and residents of the small towns were the only ones with nerve enough to wear these garments. Jokesmiths waged war on them and ridicule, if nothing else, forced the linen duster into retirement. Now the twentieth century has discovered that our forefathers in the rural districts were really sensible in the selection of a garment that was cheap, that was comfortable and at the same time a saver of clothing. The operation of a motor car necessarily demands a loose-fitting coat that takes the place of the overalls of the workmen in the protection of one's clothes and so the old-fashioned linen duster once more has come into its own. It no longer is the badge of ridicule; it is a useful garment that has been so modernized that now it is almost indispensable.

Because of this very demand for loosefitting garments the tailor does not get a very large slice of the motoring patronage. The manufacturers of ready-made clothing seem to have the call and few complaints are heard as to their product. As in all other lines of business into which machinery enters, the clothing trade has kept abreast of the times. The idea of making ready-made clothing originated in 1831, when George Updyke, once mayor of New York, started it. The introduction in 1870 of a cutting machine, consisting of a circular disk, which revolves with great rapidity and which can cut through twenty-four thicknesses of cloth in one operation, did a great deal in popularizing ready-made clothing and the motor toggery folk have kept pace with the progress.

Not more than 5 years ago did the manufacturers of ready-made clothing realize the importance of the motor trade, but once they grasped the situation they lost no time in meeting the demands of those who own and ride in cars. Now, according to one prominent Chicago manufac-

To the right is a suit designed by Rosenwald & Weil which is popular with the chauffeur and mechanician. To the left is another Kling duster, single-breasted and featured by a swagger cut, slash pockets, military collar and adjustable windshields in cuffs. It is made in olive drab mercerized material and also in waterproofed

turer, the motor clothing department of his business is one of the most important in his establishment.

As the situation has worked out there now is waging a battle for the American business in which the foreign and domestic concerns are involved. Your Yankee, though, claims to have the better of the fight. He admits the importers of foreign garments are worthy foes, but on the other hand he also claims he is shipping coals to Newcastle himself. There is one Chicago concern which has fifty agents in Canada and which also does considerable business in Europe.

Facts About Clothing

Says the Americana encyclopedia: "Clothing is the artificial coverings worn by human beings for protection against the weather and from motives of decency. Nothing is more necessary to a comfortable state of existence than that the body should be kept in a nearly uniform temperature. The skin, by increase of perspiration, carries off the excess of heat; the lungs, by decomposing the atmosphere, supply the loss; so that the internal parts of the body are preserved at a temperature of about 98 degrees under all circumstances. . . . The only kind of dress that can afford the protection required by the changes of temperature to which high northern climates are liable is woolen. . . . Cotton cloth, though it differs but little from linen, approaches nearer to the nature of woolen and on that account must be esteemed as the next best substance of which clothing may be made. Silk is the next in point of excellence, but it is very inferior to cotton in every respect. Linen possesses the contrary of most of the properties enumerated as excellencies in woolen. It retains the matter of perspiration in its texture and speedily becomes imbued with it; it gives an unpleasant sensation of cold to the skin; it is very readily saturated with moisture, and it conducts heat too readily."

Everyone does not wear dusters, and so here is a Rosenwald & Weil top coat cut along modern lines, which is very comfortable for evening wear

This is the same coat showing the convertibility of the collar, which may be turned up if desired, which gives additional warmth.

Dusters Are Popular

Of course designers of motoring toggery know these points and govern themselves accordingly, but, as explained above, they have mostly to do with the outer garments such as top coats and dusters. It is in the latter that the greatest diversity of ideas is found, and this year the motorist can secure garments of all kinds of material. In the main, though, the ideas run to waterproof material wherever possible because the average motorist does not like to overburden himself with clothing when starting on a tour. Therefore, the aim has been to produce a garment which will serve three purposes—be a light coat that will shed the dust and protect the clothing when occasion demands, keep the wearer warm should the mercury drop, and keep out the moisture in case it rains.

That word waterproof has been sadly abused and designers of clothing admit that it should be modified and moisture-proof used instead, for the claim is made that there is no material, unless perhaps it is the tarpaulin used in making seamen's rain coats, that will shed the water after exposure for several hours to a heavy downpour. It is cited where experiments were made of sinking an air-tight glass ball into the ocean and pulling it up full

To the left is a sweater designed for women's motoring use made by the Blauvelt Knitting Co. of Newark, N. J. It is French stitched, has a semi-roll collar and adjustable neckpiece. To the right is a Kling leather-trimmed, single-breasted duster made either of twill or khaki

Women find it hard to secure suitable headgear for motoring purposes. This idea was conceived by a Chicago concern

of water several hours later. But the designers have evolved something that will shed an ordinary rain and still be in style. The English perhaps have solved this problem with their garments made of gabardine and Burbery cloth, but the American material is declared to meet all demands made upon it.

Some New Ideas

A late American idea is a light garment male of balloon silk which is made for both sexes. Its light weight is a feature, a garment for an adult weighing only a pound. The price starts at $10 and goes up, but it is not what one might call expensive. Going still further, one finds an imported gabardine waterproof garment made with changeable silk yokes and sleeve linings, having an inlaid velvet collar which lists at from $35 up. Then there is a garment made of silk rubberized pongee which is very popular.

In the way of dusters one can find the kind our fathers used to wear, the linen

Loosely-fitting top coats are in great demand among motorists. A checked garment is shown in the above illustration which is popular this year

garment which can be washed and which is so cheap that one can throw it away after it has become travel-worn and then not feel extravagant. One can get one as cheap as $1.50, or he can pay as high as $18. Then there is the khaki duster which ranges in price from $2.50 to $7.50; the mohair in fancy and solid colors which runs from $5 to $15; the silks that go from $8.50 to $20, and the poplins which start in at $1.50 and range up to $20. In addition are found dusters made of canton and bombazine.

A new feature found in several of the different lines of dusters is a convertible collar by means of which one can have two styles of collar. One is of the lapel style that is found in an ordinary coat, while by turning up the collar one gets the box or military effect that makes motoring comfortable either in hot or cold weather. Along these same lines are improvements in shoulders and sleeves which now are cut to give perfect freedom to the motorist and still appear fashionable. The English have what is known as the pivot style, which removes all strain on shoulder or arm, while the raglan brings about practically the same effects.

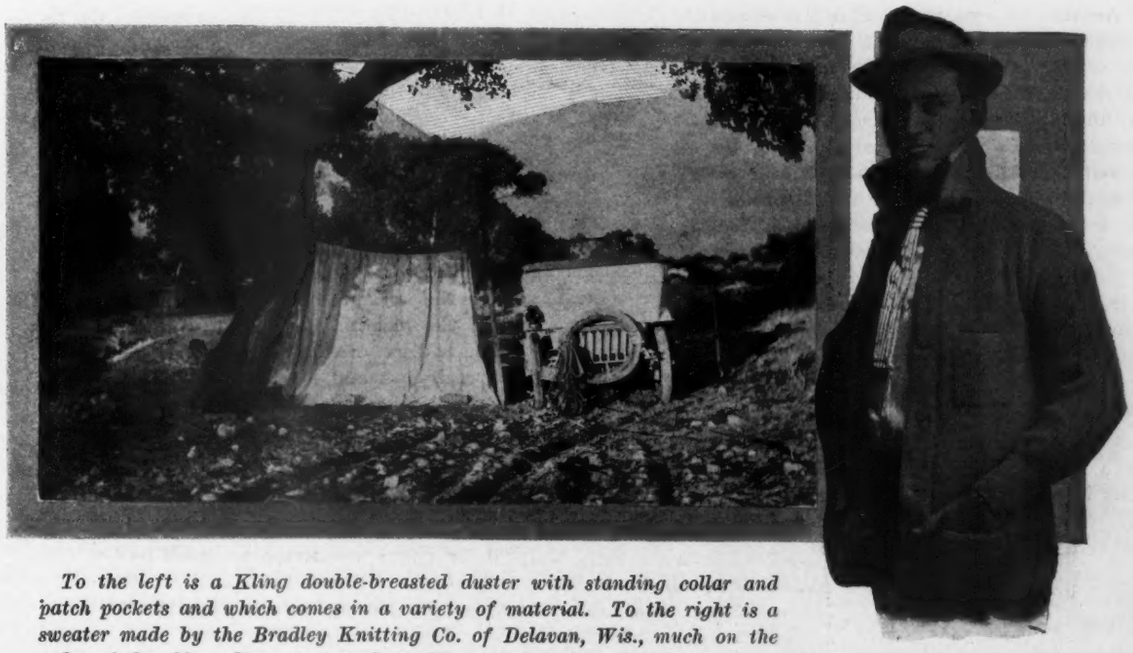
Clothing for Chauffeurs

Chauffeurs are being catered to by American designers, and one of the latest ideas comes in Rosebury cloth which is declared to be shower-proof. Then there is one that is made of high-grade khaki with a convertible collar. Another chauffeur's uniform is made in lightweight domestic gabardine with a Norfolk jacket on which the price ranges from $22.50 to $30.

Polo coats for both spring and winter wear have grown into popularity within the past year, and whereas last season most of these garments were imported, now one finds the domestic article which ranges in price from $20 to $35. Sweaters, too, are found useful by both sexes, for they easily are carried and when needed often save the motorist from much discomfort.

English Styles

English styles continue about the same as last year—light yet warm garments, and with a swagger cut that appeals to many. Top coats offer a wide range of choice and on these the price runs from $40 to $50 for garments made of tropical cloth with linings in colors.



To the left is a Kling double-breasted duster with standing collar and patch pockets and which comes in a variety of material. To the right is a sweater made by the Bradley Knitting Co. of Delavan, Wis., much on the order of the old cardigan jackets, but with an adjustable collar

Delivery Problem Worries the Makers

Detroit Manufacturers Figuring On a Schedule That Will Transfer Spring Rush Into Slack Months of Autumn and Winter—Several Good Expedients Have Been Discussed

DETROIT, Mich., May 1—How to arrange a schedule of deliveries which will enable the manufacturers of motor cars to transfer some of the spring rush into the slack months of the autumn and winter is a problem to which the local members of the industry are turning their attention more than ever before.

All the Detroit factories are now crowded with work and behind their orders. Nearly all are working nights or overtime, a unique demonstration being the crowded street cars which convey the night shift to and from its work when the general public usually has these conveyances to itself. The condition is doubly pressing this year because of the curtailment of product on which many of the local manufacturers planned in the closing months of last year. The rush of orders has caused a similar increase in the demand for parts, and the manufacturers of these commodities are striving as hard to keep up with the demand as are the motor car makers themselves, and with about equal success.

Studying New Methods

There is a growing belief that these conditions ought not to prevail and several expedients are being worked out. One local factory has constructed an immense new building, which will be used for storage purposes during the winter, the firm being determined, if conditions seem to warrant, to tie up a large sum of money in completed cars, with the expectation of prompt deliveries in the spring and without undue haste.

Another is now renewing its contracts with agents on the basis of a sliding scale of selling commissions, the latter being increased for the slack months and correspondingly decreased for the months when the demand is usually greatest. It is believed that this will result in winter orders from dealers who now are accustomed to hold off until the latest possible moment, this resulting in a flood of orders at a time when the factory is naturally burdened with its heaviest load of production. The advantage of transferring the storing responsibility from the factory itself to its dealers would obviously be considerable, provided the plan works out.

All the local manufacturers are looking to a large season for the 1912 models. This is particularly so with the manufacturers of big, high-powered cars. The Packard Motor Car Co. reduced its rate of production materially for the 1911 models, but made an unusually early switch this year to the 1912 types and is pushing production at greater speed than at any time in the firm's history, announcing record-breaking orders for this season of year. The Lozier Motor Co. also expects to materially increase its output of 1912 cars over 1911.

Prominent Visitors in Detroit

A visitor to Detroit during the past week was M. Renaud, of the Renaud company of France. He inspected several of the Detroit factories and was amazed at the rate of production and the specialized machinery in use.

Another visitor was Cornelius V. Collins, of Troy, N. Y., former superintendent of prisons of New York state. He spent several days at the Packard factory, negotiating for the company's line, with the view to retailing it at Albany, N. Y. Mr. Collins' Detroit visit, which so closely followed his resignation as superintendent of prisons, created quite a stir in Detroit politics.

Export trade continues to be a feature of the season. The Hudson Motor Car Co. announces the receipt of a large order from the firm's representative in Calcutta, India. H. T. Dodge, the Calcutta manager, believes there is a great future for American-built cars in that country. The roads are fairly good and the extreme heat makes travel by horses almost impossible, the animals being compelled to rest through the middle of each day. Several other Detroit manufacturers have found the Indian field a profitable one for cultivation.

The Universal Motor Truck Co. is now engaged in occupying its new factory buildiing at Theodore and Dequindre streets and is arranging to build 1,000 trucks for the coming season, featuring a 3-ton vehicle. The company announces the appointment of F. R. Bump to the position of sales and advertising manager. Mr. Bump was formerly in a similar capacity with the Owen Motor Car Co., and accompanied that firm when it was merged with the Reo in Lansing.

The Lion Motor Car Co., whose factory is at Adrian, though the stock is held in Detroit and this is the location of the sales department, has had two racing cars in this city for several days and is said to be meditating an incursion into the field of systematic competition. The cars are stock, aside from smaller wheels and a 2¼-to-1 gear.

News From Stunt Cars

Fresh news from the stunt cars of the local factories finds the world-touring Hupmobile in Hong Kong, ready for a dash across Asia and Europe. The Abbott-Detroit Bulldog, which is acquiring a mileage of 100,000, has left San Antonio, bound for Mexico City, and will cross the border at Laredo, following the route of the Under Three Flags Flanders 20, which made that trip last summer. The Warren-Detroit Wolverine is on its way east, after completing the first leg of its transcontinental-and-return tour.

The receipt of a remarkable order is announced by the Ford Motor Co. It came from the Bell Telephone Co. of New York, which purchased sixty-five of the firm's model T cars for the use of its maintenance and collecting departments. This is believed to be the largest order ever booked from one user.

CHANGES IN CLEVELAND

Cleveland, O., May 1—Several important changes have taken place in agencies, sales forces and location of sales rooms in Cleveland during the past 2 weeks in preparation for the summer selling months. The Ford Motor Co.'s Cleveland branch moved today to its new building at 4400 Euclid avenue. The Goodyear Rubber and Tire Co. has moved to its more commodious salesrooms in the Spencerian building. The Kelley-Springfield Tire Co. is planning to open a new salesroom in the Kennedy block, Euclid avenue and East Nineteenth street.

The Motor Tire and Rubber Co. has been organized under the laws of Ohio with a capital of $10,000. E. C. Anderson is the president and general manager. The Thompson Oil Co. has taken larger offices at 507 Schofield building. The Leitz Motor Car Co., of Wyandotte, Mich., will shortly open a branch here. The Columbus Buggy Co. has moved to its new quarters. The Parrish Motor Car Co. has succeeded the Standard Motor Car Co. as Packard agents in Cleveland. The agency is located temporarily at 5017 Euclid avenue.

Herbert Ash, a banker of Fostoria, O., has come here to take charge of the Abbott Sales Co. as general manager. Headquarters are located at Euclid avenue and East Nineteenth street. An important deal was closed when the White Co. leased Euclid avenue show rooms, taking over the headquarters heretofore occupied by the Standard Automobile Co., at Euclid avenue and East Seventy-first street. The garage and repair room will be maintained at the factory. The Pullman Motor Car Co. has taken over the Warren-Detroit agency.

JOHNSON DECLARES DIVIDEND

Milwaukee, Wis., May 1—A dividend of 8 per cent was declared at the annual meeting of the Johnson Service Co., Milwaukee, Wis., manufacturing motor cars, trucks, motors, etc. The company increased its capital stock by $500,000 only a year ago to provide for the extension of the motor car business. Warren S. Johnson was reelected president and treasurer; Frank Abbott was elected vice-president to succeed Frank J. Kipp and Horace A. J.

Upham was elected secretary to succeed W. C. Brust. The company is backed by leading interests in Milwaukee and on the board of directors are: David C. Owen, postmaster; Judge Joshua E. Dodge, until recently justice of the Wisconsin supreme court; Clement C. Smith, traction magnate; George H. Russell, one of the largest insurance underwriters in the Northwest. The annual reports showed an excellent financial condition and, in addition to paying an 8 per cent dividend, a handsome sum was turned into the surplus fund.

SHOW AT UTICA A SUCCESS

Utica, N. Y., April 29—Utica's first motor show was given in the armory this week. It opened on Wednesday night and closed tonight. The show, promoted by Louis Blumenstein, was a success in all respects, and it is stated that the city will now have one annually. The show was opened by C. Arthur Benjamin, of Syracuse. The different makes of cars shown were: Stevens-Duryea, Peerless, E-M-F., Brush, Jackson, Elmore, Corbin, Warren-Detroit, Regal, Whiting, Detroit electric, and Ford.

Such was the success of the exhibition that yesterday the exhibiting dealers met and formed the Utica Auto Show Association and arranged to have the next show March 27 to 30, inclusive, next year. The officers of the association are: E. A. Willoughby, president; C. B. Rice, vice-president; J. C. Whittle, treasurer, and F. E. Henebray, secretary. The total attendance approached 6,000, which exceeded expectations for an initial exhibition.

MEXICO'S NEW RUBBER INDUSTRY

Guanajuato, Mexico, April 29—Representatives of the American-Mexican syndicate that is preparing to manufacture rubber from the palo amarillo tree on an extensive scale have been busy for several months contracting with land owners for the rights to use these trees, and it is stated that several million acres now are under control of the syndicate. Among the men interested in the big project are David E. Thompson, of Lincoln, Neb., former United States ambassador to Mexico; Colonel Porfirio Diaz, son of President Dias and Colonel Felix Diaz, nephew of the president of the republic. Experiments in the manufacture of rubber from the palo amarillo tree have been in progress for some time, and they are said to have given results entirely satisfactory.

The first of the rubber manufacturing plants of this syndicate is in operation at Empalme Gonzalez, state of Guanajuato, and the machinery has arrived in this country from the United States for five other plants, which will be installed in this state and in the state of Jalisco. It is probable that three of the proposed new plants will be located in the vicinity of Empalme Gonzalez and the other two at points in Jalisco, near to the source of supply of the trees. The syndicate has a capital stock of $20,000,000 gold, and it is reported that it is closely allied with the Intercontinental Rubber Co., which is extensively engaged in the manufacture of crude rubber from the guayule shrub in northern Mexico.

It is claimed by men who have investigated the extent of the growth of the palo amarillo tree that it is indigent to a limited territory in this country, but that there probably are more than 10,000,000 trees available for commercial purposes. The tree bears no resemblance to the rubber tree that is commonly known to the rubber trade of the world. It is tapped, however, in much the same way as the rubber tree and gives an abundant yield of sap. The palo amarillo may be easily propagated and it requires no attention after it once starts growing. Mr. Thompson and associates plan to not only utilize the wild trees, but they also will plant many extensive groves of them and make the industry a growing and permanent one.

The shipments and tests of the crude rubber that has been manufactured from the milk of the palo amarillo show it to be about the same quality as the guayule rubber. It is said to be specially suited for the manufacture of motor car tires and various uses in the rubber trade. One of the most difficult features of the new industry is the remoteness of the forests of palo amarillo trees from railroad transportation. This is one reason the commercial possibilities and value of the tree was so long in being discovered. In most cases, the machinery for the rubber factories must be transported considerable distances, and the remoteness of the forests also makes the transportation of the product and supplies expensive and sometimes difficult.

Export Business Is Still Growing

Returns for March Prove That No Other American Indusrry Shows Larger Gains Than the Foreign Business of Motor Car Manufacturers in United States—Imports Continue to Fall Off

WASHINGTON, D. C., April 29—No branch of the American export trade is showing larger gains than the motor car industry, each succeeding month developing increased demand for American cars in the foreign markets. The latest returns of the federal bureau of statistics show that during March 1,510 cars, valued at $1,364,402, together with $274,545 worth of parts, not including tires, were shipped to various foreign countries. During the corresponding month of last year 751 cars, valued at $806,184, and $201,203 worth of parts were shipped abroad. During the 9 months' period ended March the number of cars exported increased from 4,180, valued at $5,372,458, in 1910, to 7,350, valued at $8,285,294, in 1911. During these periods the exports of parts increased in value from $1,009,813 to $1,551,887.

Comparisons Are Made

The shipments of cars and parts to various countries during certain comparative periods were as follows:

MARCH

Exported to—	1910	1911
United Kingdom	$133,679	$330,223
France	26,751	70,434
Germany	4,336	14,494
Italy	111,073	29,016
Other Europe	36,612	42,779
Canada	524,209	778,402
Mexico	40,189	61,161
West Indies and Bermuda	57,171	29,255
South America	26,476	74,437
British Oceania	14,793	83,898
Other Asia and Oceania	14,220	86,001
Other countries	17,878	38,847

NINE MONTHS ENDING MARCH

Exported to—	1910	1911
United Kingdom	$931,534	$1,657,990
France	215,956	345,222
Germany	61,458	185,699
Italy	163,336	130,707
Other Europe	159,753	442,276
Canada	923,475	3,884,447
Mexico	279,738	545,641
West Indies and Bermuda	217,593	311,232
South America	105,947	594,284
British Oceania	80,308	905,684
Other Asia and Oceania	82,147	614,650
Other countries	57,790	219,349

Imports Continue Declining

Imports of foreign cars and parts continue to decline. During March last the number of cars imported was forty-eight, valued at $92,206, together with parts valued at $28,623. In March a year ago ninety-seven cars, valued at $191,099, and parts valued at $110,137 were imported into the United States. During the 9 months' period the number of cars imported dropped from 1,149, valued at $2,231,696, in 1910, to 634, valued at $1,342,350, in 1911. During these periods the imports of parts fell in value from $748,060 to $240,868. The imports of cars during March were as follows: United Kingdom, 8, valued at $17,314; France, 22, valued at $39,644; Germany, 3, valued at $5,976; Italy, 4, valued at $6,631; other countries, 11, valued at $22,641.

ST. LOUIS HAS NOVEL RUN ON

St. Louis, Mo., May 1—Entry blanks will be sent out this week for the first run to be held by the newly organized Missouri State Automobile Association, May 30. There will be two pleasure car divisions for gasoline cars, one for electrics, and a division for trucks. One of the gasoline pleasure car divisions will be for dealers and the other for owners. The prescribed course is 34.7 miles in St. Louis county. The dealers must cover the course three times on a prescribed schedule, while the owners will be required to go around but once. The electrics also will be required to go the 34.7 miles, as will the motor trucks, these to be run on a tonnage-mile basis. No professional drivers will be allowed to compete, and in the owners' division only immediate members of family will be permitted to drive.

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Merchandizing the Car

NOT a few dealers in high-priced cars have had a little difficulty in disposing of some of their cars this season because the buyers wanted a few body alterations, which the dealers were not at liberty to give because of the factory insisting on selling the standard body type. Perhaps the buyer wanted a larger front seat, being a rather corpulent man; perhaps a different rear seat was wanted; it might have been a top feature that called forth the dictation of the factory; in another case it was the carbureter equipment; another was about the magneto situation; another was because of the make of tire; and so the story went. It all suggests this one point, that next year there will be more merchandising of cars among the higher-priced machine, the term merchandising being used to indicate that ability of the dealer to provide for slight alterations in the body equipment or furnishings as desired by many owners.

MANY buyers feel that when they pay $5,000 or more for a machine they have some right to dictate regarding a few of the comfort parts of the cars, in addition to the color of the paint and the color and quality of the upholstery. At the present day several dealers in the majority of the cities are adepts at this work; in other words, they are proving themselves to be good car merchants. There are dealers in several of the larger cities who pay the local body builders from $3,000 to $5,000 per month for special body work required by the fastidious car buyer. These dealers frequently buy stripped chassis and have bodies built to suit their buyers' whims, whereas in many other cases they buy bodies minus the upholstery and seat springs or exterior finish, leaving the completion of it to the local builder.

THE merchandising of cars does not mean a loss to either the manufacturer or the dealer, it generally means money to both; at least it means a sale, and a merchandising sale is always superior to a price-cutting sale. Where changes are to be made in a car body, its fittings or equipment, it is natural for the buyer to expect to pay for these changes, and where a change can be made on this understanding it is an indication of good business judgment on the part of the dealer. As already stated, there will be more of this merchandising next year than there has been this year, and it will be up to the manufacturers to co-operate with the dealers in training them along these merchandising lines, so as to get the maximum results out of the selling end of the business.

WITH low-priced cars the merchandising spirit cannot be extensively used, the profit on the finished car is too small, and with these cars it is imperative that they be turned out in big quantities in order to be sold at the low rate. But in the low-priced field, when selling becomes more of a science, options on color of the body and the color of the upholstery will be given in order to make sales. Up to the present the demand for these cars has been so great that merchandising has not been necessary, but when the demand diminishes it will be necessary to give options that are not now listed. It will not be surprising to also find many changes made in the body equipment at the dictates of the buyer, but which changes will have to be paid for by the buyer. The buyer cannot expect extras without paying for them in this field any more than in the high-priced field. At present options in tires are not given on the low-priced cars on the ground that the car builder buys the tires in very large quantities and so gets them at reduced rates, rates which he could not buy them at if purchasing in smaller quantities from half a dozen or more tire manufacturers. The same applies to the lamp equipment, the horn equipment and the speedometer equipment. When the time comes that it will be necessary to introduce the merchandising spirit into the sale of medium-priced cars it will be certain that the makers will be ready to handle the question, but it will also be true that these makers will have to take hold of many of these dealers and educate them in the arts of merchandising cars. Merchandising does not mean price-cutting, it is entirely opposed to this, and so must sooner or later become a legitimate portion of the industry as it has become a part of many of the staple industries of the present day.

ANOTHER problem that confronts the manufacturers in disposing of their product is to accommodate themselves to the demands of the dealers. As it now is, the demand is not steady. Agents wait until the last minute before placing their orders, and in consequence of this most of them file their declarations at the same time, which causes great congestion at the factories, necessitating night work, double shifts and other expensive expedients to keep up with the demand. This makes it so that this rush comes in the spring and leaves the plants practically idle for several months in the late fall and winter. How to get away from this and keep factories going at a uniform rate the year around is the problem that faces the makers.

TO a certain extent the dealers cannot be blamed for this situation. They are conservative to a certain extent and hardly feel like prognosticating 6 months ahead the fancy of the buying public. While the prospects may seem bright in the fall and a good season anticipated, there may come some financial flurry in the winter that will change the entire aspect of the selling situation. Nevertheless, this situation greatly embarrasses the factories and something should be done to equalize matters and take off the strain that now exists.

DETROIT seems to be suffering most from this situation, and even now the manufacturers there are looking for some way out of the dilemma. One concern has about determined to invest a large sum of money in a big warehouse, in which it can store its finished cars and be able to fill orders at any time without straining itself. By having a place like this it would be possible to run the factory on a regular schedule and thus avoid the spring rush. Another company is renewing its contracts with its agents on a sliding scale in the way of commissions. Cars sold during what now are regarded as the slack months will be sent to the agent at a bigger discount than those which are taken when the spring rush comes. This scheme, it will be noticed, will transfer the responsibility from the factory to the dealers.

Big Merger of Newspaper Interests

United Publishers' Corporation, a $7,500,000 Holding Company, Takes Over Three Groups of Trade Publications, Including Class Journal Co.

NEW YORK, May 2—A large and important merger of class journals was completed yesterday by a formation of a $7,500,000 holding company, called the United Publishers' Corporation, to take over three groups of trade publications, most of them in New York. These are an iron and steel unit, represented by the publications of the David Williams Co., including the Iron Age, Iron Age Hardware, the Metal Worker and the Building Age; a dry goods unit, represented by the publications of the Root Securities Co., and including the Dry Goods Economist, the Dry Goodsman, the Dry Goods Reporter, the Boot and Shoe Recorder, and other papers; and a motor car unit, represented by the Class Journal Co., and including the Automobile, Motor Age, the Commercial Vehicle and the Automobile Blue Book. Nearly all of these are published in New York. The Boot and Shoe Recorder is published in Boston, and Motor Age in Chicago.

The organization has been brought about about by I. A. Mekeel, of the Root Securities Co., who has associated with him Condé Nast, of Vogue, House and Garden and the Travel Magazine. These magazines are not included in the merger, which is purely a trade paper organization.

The directors of the new corporation are, besides Messrs. Mekeel and Nast, Charles T. Root, who is the president; H. M. Swetland, Charles G. Phillips and W. H. Taylor.

Mr. Root is president of the Root Securities Co. and of the David Williams Co. Mr. Phillips is associated with Mr. Root in the management of these properties.

Mr. Swetland is president of the Class Journal Co. and of the Federal Printing Co. Besides his present holdings, he has in the past owned a number of different trade papers.

Mr. Taylor is treasurer and general manager of the Iron Age.

At a meeting of the stockholders of the Class Journal Co., held today, the following directors were elected for the ensuing year: H. M. Swetland, A. B. Swetland, E. M. Corey, N. H. Van Sicklen, Jr., and Condé Nast. After the stockholders' meeting the newly elected directors convened and elected the following officers for the ensuing year: H. M. Swetland, president; A. B. Swetland, vice-president and general manager; E. M. Corey, secretary and treasurer.

All of the publications, with the exceptions noted, are now housed under one roof in the Publishers' building, at 239 West Thirty-ninth street, which is owned by another company, in which the same interests are represented, and are being printed by the Federal Printing Co., which occupies several floors in the same building. The Iron Age has only lately been moved up from Park place, but has one of the handsomest sets of offices.

The co-operative arrangement among the various members of the present merger has been growing from year to year and is now carried to its logical conclusion by placing the stock of the three companies in a holding company. The union is to secure economy, uniformity and permanency of policy and does not imply any change in the business and editorial management of the various publications mentioned. Each will continue separate, as before, and develop along its own lines, while profiting from the infusion of new blood and new ideas.

Large economies have already been effected by the closer physical grouping of the properties. The same storehouses and stockrooms serve for all, and the same printing plant, which is entirely modern in every respect, and so complete that even the stocks and bonds needed for the merger are being engraved and printed on the premises.

A decidedly increased efficiency is possible by the merger, in the purchase, for example, of paper stock, ink, and other supplies and in the conduct of agencies in other cities. This was one of the main arguments for closer union.

Another cogent reason was the desire on the part of the younger element in the organization to develop the enterprises to still greater possibilities.

The resulting organization is a close corporation—a publishers' organization, as the name implies. The voting power is vested in a voting trust of three, and the management in the directors.

As soon as the arrangements for the merger were completed, about the middle of March, Messrs. Root and Phillips left for a trip around the world.

An interesting feature of the merger is Mr. Nast's connection with it. He has not heretofore entered the trade journal field, and the extent of his activity remains to be seen. That the enterprise will derive great benefit from his association with it is assured.

Coming Motor Events

May 5-8—Reliability run from Los Angeles, Cal., to Lakeside Inn and return.

May 7—Targa Florio road race, Italy.

May 14—Cataluna cup road race, Spain.

May 16-19—Four-leaf clover endurance run of Automobile Club of Washington, D. C.

May 21—Hill-climb, Limonest, France.

May 21—Ries hill-climb, Austria.

May 25—Touring car kilometer speed trials, Le Mans, France.

May 25—Fuel economy test, Chicago Motor Club.

May 27-31—Five-day tour to Indianapolis of Chicago Automobile Club.

May 28—Hill-climb, touring cars, Le Mans, France.

May 28—Touring car reliability trials in Germany.

May 29-31—Tour to Indianapolis of Chicago Motor Club.

May 30—Reliability run of Missouri Automobile Club from St. Louis.

May 30—Five-hundred-mile international sweepstakes race, Indianapolis motor speedway.

May 25 or 28—Meuse hill-climb, Belgium.

June 1—Speed trials, Bucarest, Roumania.

June 4—Hill-climb, Trieste, Australia.

June 8—Algonquin hill-climb, Chicago Motor Club.

June 16-20—Little Glidden tour of Hyperion Field and Motor Club of Des Moines, Ia.

June 18—Voiturette and light-car road races, France.

June 19-25—Glidden tour from Washington, D. C., to Ottawa, Canada.

June 25—Grand prix of Automobile Club of France.

June 25-July 2—Endurance contest, Denmark.

July 1-3—Reliability run of Motor Contest Association through Catskills.

July 4—Track meet of Wolverine Automobile Club of Detroit.

July 4-20—Prince Henry tour.

July 2—French grand prix road races.

July 13-20—Ostend week, Belgium.

July 17-19—Three-day reliability run of the Cleveland News of Cleveland, O.

July 17-22—Second annual reliability tour of the Wisconsin State Automobile Association.

July 21-24—Meeting at Boulogne-sur-Mer, France.

August 6—Mount Ventoux hill-climb, France.

August 25-26—National stock chassis road races, Chicago Motor Club. Elgin, Ill.

September 2-11—Agricultural motor vehicle show, Roubaix, France.

September 9—Grand prix of Italy, at Boulogne, Italy.

September 10-20—Voiturette and small-car trials in Hungaria.

September 16—Touring car competition, St. Petersburg-Sebastopol, Russia.

September 17—Semmering hill-climb, Austria.

September 17—Start of trials of l'Auto, France.

October 1—Gaillon hill-climb, France.

October 9-13—One-thousand-mile reliability run, Chicago Motor Club.

ON THE GLIDDEN TRAIL—SECTION OF ROUTE NEAR PLANTSVILLE, CONN.

Glidden Route Is Practically Completed

Officials of A. A. A. Have About Finished Laying Out Trail For 1911 Contest—Route Selected Through Picturesque Country

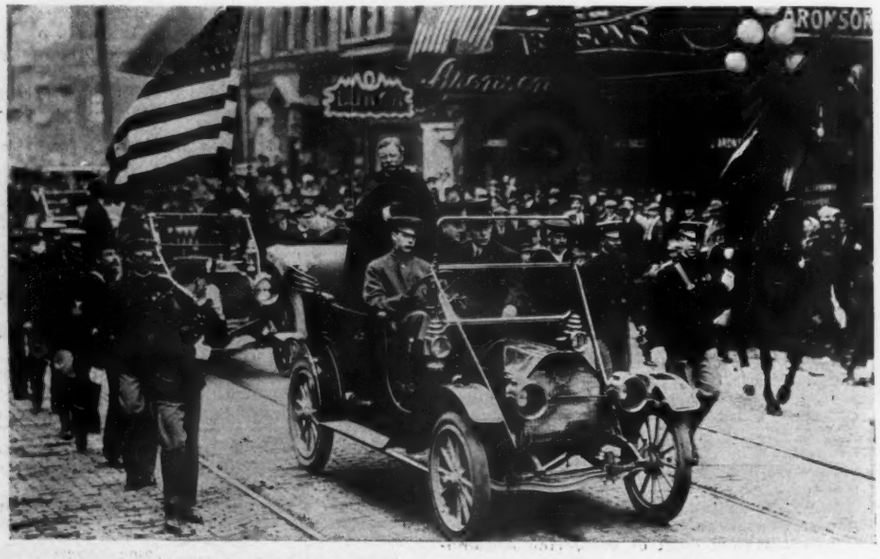
NEW YORK, May 3—The Glidden tour pathfinders now are almost through their task of laying out the route for the national endurance run which takes place June 19-26. Today they are on Canadian soil and it is expected the task will be completed by tomorrow night when the A. A. A. officials, Longstreth, Butler and Ferguson, are counting on reaching Ottawa, the capital of the dominion.

The contest board heard from the trail-blazers Monday night when Chairman Butler wired from Montpelier, Vt., telling of a trip from Groton, Mass., via Fitchburg, Keene, N. H., and the rolling hills of the Connecticut river valley to White River Junction, where luncheon was had, and then through Williamstown Gulf to Montpelier. The Tuesday run was to Burlington and today the journey was to Montreal.

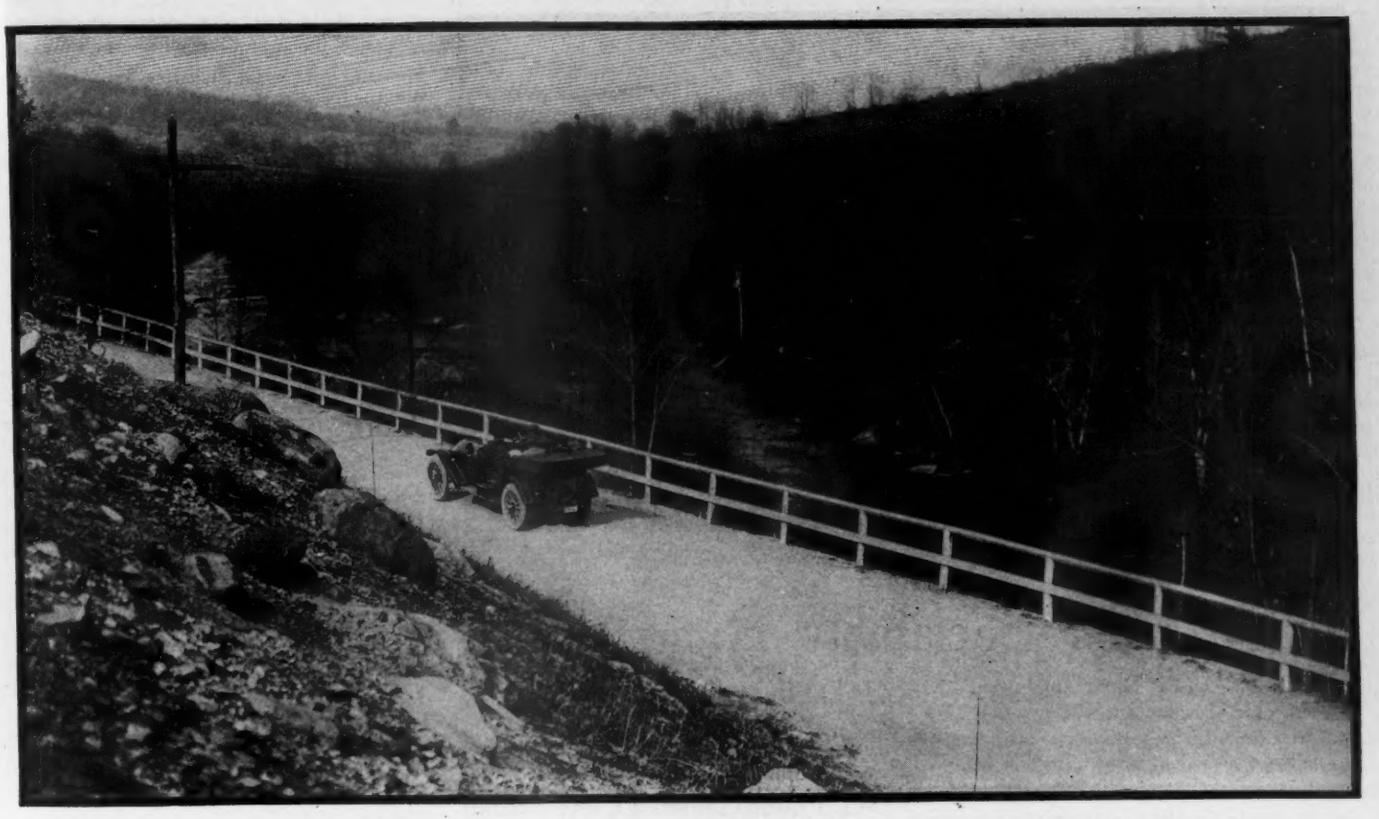
The roads thus far encountered have been found unusually good for this time of the year and when the contest proper takes place the highways and byways and mountain trails will be in far better shape. The route as picked out and announced thus far includes such large cities as Baltimore, Wilmington, Philadelphia, New York, Bridgeport, Waterbury, Hartford, Springfield and Boston.

In this respect the coming contest is different from all of its predecessors, for such varied country will be included. Starting in the hills of Maryland, made famous in the civil war through the activities of Stonewall Jackson and others, the caravan of cars will move northeasterly through the flat New Jersey country to the Jersey coast, taking in the beach resorts such as Lakewood, with its stately pines; Asbury Park, Long Branch and Seabright, with their surf-beaten shores. Thence the cars will go via the metropolis to the Connecticut valley, in the realm of the well-known scenic tour with its fine New England roads and the rolling Berkshire hills and the steep Green mountains, and then into the forests and lakes of the dominion.

As the tour has been tentatively planned it will cover a period of 8 days and a distance of about 1,091 miles. All the days will not be traveling ones, however, as on the fifth lap of the tour a hill-climb will be



COLONEL ROOSEVELT TRAVELS IN E-M-F AT SEATTLE



ON THE GLIDDEN TRAIL—FOLLOWING THE WARE RIVER NEAR PALMER, MASS.

held and all competing cars will be obliged to climb the slope with the same equipment, gear ratio and passenger load as when traveling in the tour proper. As yet the hill has not been decided upon definitely, although the pathfinding car negotiated several climbs, any of which would be suitable for the purpose intended. It is understood, however, that a hill near Montpelier will be selected for the climb. which is a feature never before introduced in a Glidden tour.

BUMPER PATENTS IN COURT

Chicago, May 1—By a decision of the United States circuit court for the northern district of Illinois, the J. H. Sager Co., of Rochester, N. Y., has been awarded a permanent writ of injunction against the Triple-Action Spring Co. of Chicago, restraining the latter concern from manufacturing and selling the Triple-Action bumper, on the ground that it infringed the patent of the J. H. Sager Co., No. 885,181, dated April 21, 1908.

The J. H. Sager Co. announces it now has pending in the United States circuit court for the northern district of New York, a suit against the Emil Grossman Co. on the same patent, to restrain the manufacture and use of the sale of a bumper designed by A. L. McGregor of Duluth, and sold by the Emil Grossman Co. as the Swivelaction bumper, on the ground that it infringes this same patent.

National Circuit Scheme Abandoned

Attempts to Promote Series of Big Meets Fail Because Makers Could Not Figure Proportionate Returns From the Estimated Investment

NEW YORK, May 2—Special telegram—There will be no grand circuit racing train this year. At any rate, the project has been abandoned and late Wednesday afternoon the various interests represented will meet to give the plan its quietus. The Manufacturers' Contest Association is preparing a statement to the industry telling the reasons for the abandonment.

The abandonment of the train idea will not affect the sporting situation save that it has caused delay in the announcement of dates all over the country. The M. C. A. announcement will be made in the near future. The facts in the case are that the makers of motor cars figured that the cost of the train would prove out of proportion to the benefits that would result from it.

ANNUAL BANQUET OF SYRACUSE AUTOMOBILE CLUB

START OF QUAKER CITY MOTOR CLUB'S SOCIABILITY RUN

Club Leader Sociability Run Winner

L. D. Berger Comes Within 24 Seconds of Secret Time Schedule On Philadelphia-Atlantic City Trip —G. Hilton Gantert a Close Second

ATLANTIC CITY, N. J., April 30—L. D. Berger, president of the Quaker City Motor Club, in a Columbia car, Harry Walls driver, proved to be the best gauger of time for the 73 miles in the club's fourth annual social run to this resort, his car finishing within 24 seconds of the official sealed time, 3 hours, 46 minutes, 16 seconds, President Berger's time being 3 hours, 46 minutes, 40 seconds. He thus carries off the first prize. Second prize goes to G. Hilton Gantert, in a Stearns, Mr. Gantert driving his own car, being 1 minute, 8 seconds slower than the secret time allowance. Mr. Gantert also is an official of the Quaker City Motor Club. Third prize was captured by O. C. Feil, Packard car, H. Van Fosson driver, who negotiated the distance 1 minute, 13 seconds too soon. Still another officer of the Quaker City Motor Club ran away with a prize, the fourth, First Vice-President J. Fred Betz, 3d, driving his Simplex, finishing fourth, 1 minute, 14.15 seconds away. Fifth prize became the property of Joe Keir, driving a Mitchell, who finished 1 minute, 16 seconds fast.

Women in Contest

The prize confined strictly to women drivers was the object of more than ordinary interest and speculation, this feature proving a most popular innovation on the part of the club officials. Miss Emma Hardart outguessed her fair competitors by piloting a Winton in 3 hours, 50 minutes, 50 seconds, being 4 minutes, 34 seconds slower than the official time. Mrs. Edward Wilkie, in a Buick, finished second; Mrs. D. Walter Harper, third, and Miss May Hardart, fourth.

By all odds the run was the most successful of this yearly festival of the Quaker City Motor Club. The day was a well-nigh perfect one and the running conditions excellent, everything going through as originally planned, a combination productive of a most enjoyable event. A large crowd assembled around the Hotel Walton shortly before the start. The cars were lined up on both sides of Broad street, extending south from the Walton, each in its allotted space, the street being chalked off into spaces with figures corresponding to the number of the car to occupy it.

Incidents of Trip

The first car was sent on its journey promptly at 12:30, the others following at half-minute intervals. A Kisselkar truck preceded the participants, conveying their baggage to the resort. It was a question of merely feeling the way out Market street to the ferry, and it was not until the Jersey side was reached that the real start was made and the cars struck their natural clip. Being a social run and not in any respect in the nature of a speeding contest, the cars were driven at uniform speed, with a definite time limit set by each driver for his car, all mathematically planned in advance and in most cases rigidly adhered to.

The regulations under which the run was conducted were practically identical with those of last year, a system originated and perfected by Harry C. Harbach, former secretary of the Quaker City Motor Club, and by which ties are virtually eliminated.

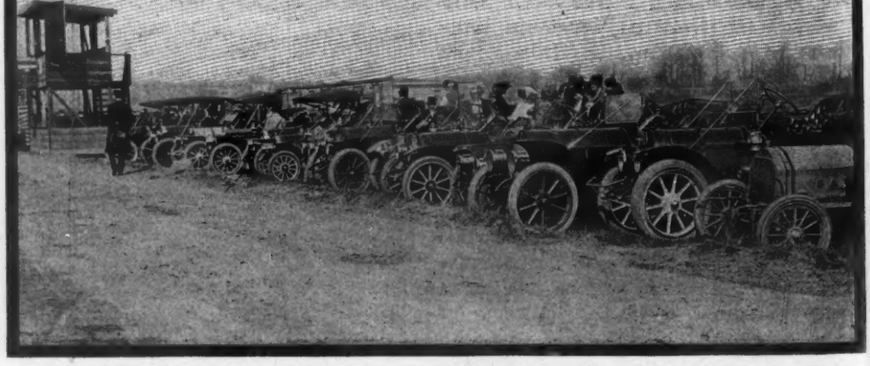
The official time was unknown to anyone and was determined by an average struck from two times designated by the mayors of Philadelphia and Atlantic City. Mayor Reyburn of Philadelphia set the time at 3 hours, 51 minutes, 13 seconds, while that of Mayor Story of Atlantic City was 3 hours, 41 minutes, 19 seconds. The two times were added together and divided, fixing the official time at 3 hours, 46 minutes, 16 seconds.

A particularly happy route, practically a new one, had been mapped out by Pathfinder George E. Potts, the roads selected being uniformly good, with a corresponding degree of comfort and enjoyableness.

One Accident on Journey

An unfortunate accident that might have had a more serious termination marred what otherwise would have been a perfect run. When about 3 miles east of Hammonton a Woods electric brougham, driven by Mrs. J. C. Bartlett, was overturned. Car No. 47, a Rainier, driven by J. W. Slemons, slightly skidded in attempting to pass the electric and hit the latter, causing it to topple over the side of the bank of the road, which was particularly steep at this point. Mrs. Bartlett was severely cut by the flying glass, but miraculously escaped more serious injury. The other occupants of the car, outside of being frightened, suffered no more than a few minor cuts and a severe shaking up. The electric was left by the roadside and its occupants transferred to Slemon's car. After Mrs. Bartlett's injuries had been attended to, the entire party proceeded to the finish, but Mrs. Bartlett did not, of course, turn in her card.

Barring this accident, all the cars arrived here safely, tire trouble on quite a few being the only cause of delay. Upon checking in here at the Strand the cars were driven to Young's Million Dollar pier, where they were parked for the night and where they were constantly surrounded by curious and interested crowds. This morning saw the departure of several of



INTERESTED CROWD AT GUTTENBERG TRACK RACES

the cars at varying intervals for Philadelphia, the time of leaving being optional with the motorists, as the run proper ended with the checking in of participants yesterday. A goodly number were loath to leave today and will postpone their return till Monday.

GUTTENBERG'S TRACK MEET

New York, April 30—De Palma, in the Simplex, was the star of the Guttenberg track meet this afternoon, making the fastest mile, :59⅖, which broke the track record, and winning the 5 and 10-mile races. De Palma started by winning the 10-mile race, with Ormsby, his teammate, second, and Robinson, S. P. O., third. De Palma and Ormsby finished first and second in the 5-mile event, with Kilpatrick, Hotchkiss, close behind Ormsby. De Palma made his final appearance in the mile time trials and reeled off the distance in track record time. David Bruce-Brown gave a 10-mile exhibition in a Fiat, the time being 11:02. Summaries:

Ten-Mile Open—De Palma, Simplex, won; Ormsby, Simplex, second; Robinson, S. P. O., third. Time, 10:13⅘.

Five-Mile Open—DePalma, Simplex, won; Ormsby, Simplex, second; Kilpatrick, Hotchkiss, third. Time, 5:02.

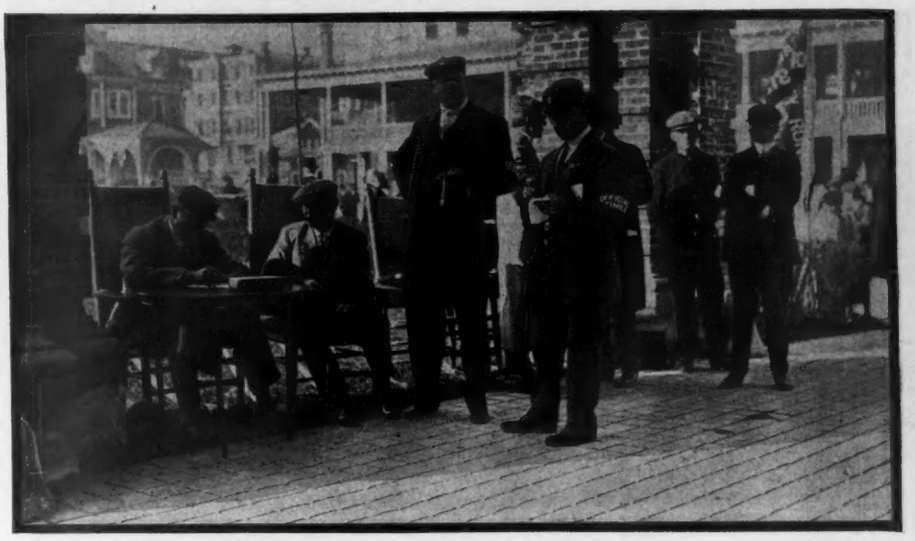
Three-Mile Race, 300 Cubic Inches and Under—Robinson, S. P. O., won; Rouse, E-M-F, second; De Hart, Chalmers, third. Time, 3:57.

One Mile Time Trials—DePalma, Simplex; :59⅖; Ormsby, Simplex, 1:01⅘; Cole, Palmer-Singer, 1:18; Rouse, Pullman, 1.19.

Ten-Mile Exhibition—David Bruce-Brown, Fiat: time, 11:02.

SYRACUSE CLUB BANQUET

Syracuse, N. Y., April 30—The eighth annual banquet of the Automobile Club of Syracuse, held last Thursday night, was the most successful affair of its kind the organization ever has given. The guests, 350 in number, included prominent residents of many cities and towns in central New York, in addition to many members of the home club, which now numbers over 600 members. A novelty was a tollgate erected at the entrance to the large dining hall which was adorned with signs denoting the club's attitude toward the tollgate situation in this section. Another novelty which took well with those present was the distribution by newsboys of burlesque copies of the Shark Thug, a clever play upon the club's official publication the Spark Plug. This sheet abounded in clever burlseques.



PHILADELPHIA OFFICIALS FIGURING SOCIABILITY RUN RESULTS

Forty-Five Cars Hoosiers' Final Count

Entries for 500-Mile Race at Indianapolis Close With Representative Field Nominated—Burman Will Probably Drive a Benz in Event

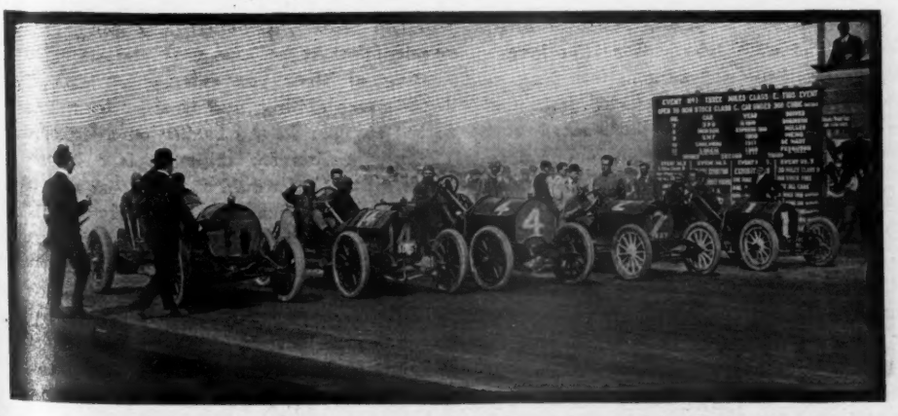
INDIANAPOLIS, Ind., May 3—Forty-five entries for the 500-mile race on the Indianapolis speedway May 30 were reported today when the management closed the books for keeps. There is a bare possibility that one or two more may come in by a later mail, but it is thought that every possible candidate has been rounded up and that forty-five will represent the final count.

The last entry to be filed today was that of a Benz, which was wired in from New York without a driver being nominated for it. One can read between the lines, though, and make a pretty shrewd guess that the pilot will be Bob Burman, for the record-holder promised last winter that he would be in the lineup. Rumors of a possible trip to England have been heard here, but it is stated on good authority that Burman will cast his lot with Indianapolis and that he will be Eddie Hearne's team mate in the fight for the $25,000 purse.

Six entries came in after the speedway's last public announcement. Two of these were Velies, which will be driven by Gibbons and Hall. Two others were Coles, one a special and the other the regular 30-horsepower model. Bill Endicott, lured from his retirement by the possibility of winning a fortune, will drive the special, while the driver of the other car has not been named as yet. The Amplex people put in a second car which will be driven by Walter Jones, while the Benz made the forty-fifth entry.

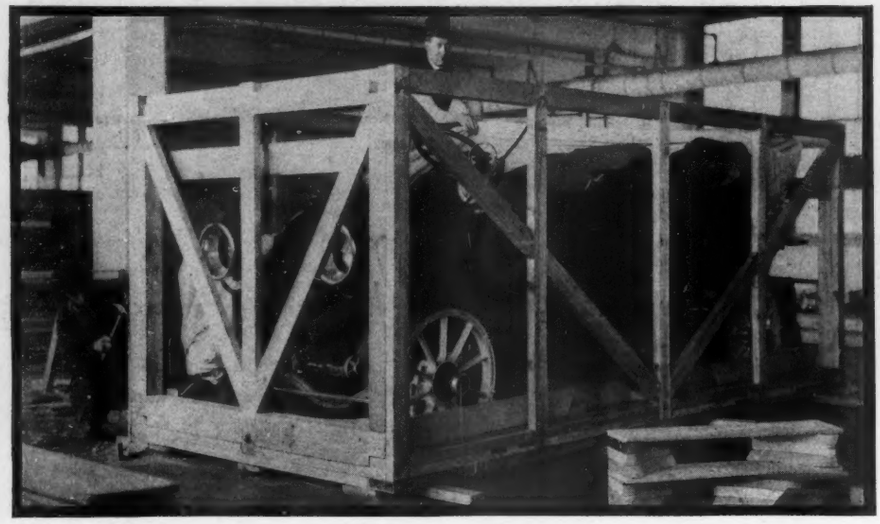
Of the cars nominated five are of foreign make—two Fiats, two Benzes and a Mercedes. There are six six-cylinder cars—the Alco, Marmon, Knox, two McFarlans, and a Westcott—and two two-cycles, both Amplexes. The field lines up now in the following manner:

No.	Car	Bore	Stroke	Driver
1	Case	4½	5	Strang
2	Simplex	5¾	5¾	DePalma
3	Inter-State	4¾	5½	Baldwin
4	National	5	5 11-16	Aitken
5	Pope-H'tf'd.	4¾	5½	Disbrow
6	Pope-H'tf'd.	4¾	5½	Fox
7	Westcott six.	4⅛	5¼	Knight
8	Case	4¼	5	Jagersburger
9	Case	4¼	5	Jones
10	Stutz	4¾	5½	Anderson
11	Mercedes	5 1-10	5 1-10	Wishart
12	Amplex	5 5-16	5	Turner
13	Falcar	4¼	5¼	Gelnaw
14	Falcar	4¼	5¼	Pearce
15	Knox six	5	4¾	Belcher
16	Buick	6	5¼	A. Chevrolet
17	Buick	6	5¼	C. Basle
18	Benz	5 1-10	5 4-10	Hearne
19	Alco six	4¾	5½	Grant
20	National	....	...	Merz
21	National	....	...	Wilcox
22	McF'lan six.	3⅝	4	Clemens
23	McF'lan six.	4	5	Adams
24	Jackson	4⅞	4¾	Ellis
25	Jackson	4⅞	4¾	Cobe
26	Jackson	5	5½	Tower
27	Cutting	....	...	Delany
28	Fiat	5	7½	Bruce-Brown
29	Lozier	5⅝	6	Van Gorder
30	F'stone-Col.	5	5½	Frayer
31	Marmon	4½	7	Dawson
32	Marmon six.	4½	5	Harroun
33	Lozier	5⅝	6	Mulford
34	Lozier	5⅝	6	Tetzlaff
35	Apperson	5½	5¾	Lytle
36	Mercer	4⅞	5	Hughes
37	Mercer	4⅞	5	Bigelow
38	Simplex	5¾	5¾	Beardsley
39	Fiat	5½	5 1-10	Bragg
40	Velie	4½	5¼	Gibbons
41	Velie	4½	5¼	Hall
42	Cole Special.	....	...	Endicott
43	Cole 30	4½	4½	.....
44	Amplex	....	...	Walter Jones
45	Benz	....	...	.....



START OF 5-MILE RACE AT GUTTENBERG, WON BY DE PALMA

Motor Shears Clip Red Tape of Europe



AS THE PACKARD COMPANY CRATES A CAR WHICH IS TO BE SHIPPED TO EUROPE

System now has brought order out of chaos, and now the American can tour Europe in his own car. He need not worry as to how to get the car across the Atlantic. Brokerage concerns take all that off his hands. They take the machine from his garage, and when he steps off the steamer on the other side the car awaits his pleasure. After the tour of Europe he turns over the car to the brokers' foreign representatives and the next time he sees it is when it is delivered to his own garage. The wheels are kept moving by means of the checkbook, but those who have made the trip in this manner declare the money is well spent. Forwarding agents handle the detail connected with a tour.

AFTER THE CAR IS PACKED; ON THE WAY TO THE FREIGHT YARDS

A FEW years ago an item appeared in some of the papers stating that one of the transatlantic steamship companies had started a service of motor cars in Liverpool to meet their passengers arriving from the United States. This was not the case but the item served to call attention to a peculiar service of which many Americans are now availing themselves. The motor car awaiting the arrival of the Mauretania, which gave rise to the story, was one which had been shipped by a Chicago customs broker on behalf of one of his clients. The car had arrived by a previous steamer and was uncrated by the Liverpool agent of the broker. Upon arrival of the Mauretania it was waiting on the dock for its owner. It was only one of the great number of cars which had been shipped from this country in a similar manner.

Now Uses Own Car

Nowadays the luxury of travel abroad does not end with debarkation. No longer does the well-to-do American traveling in Europe endure the back-breaking jolts and the snail's speed of the buckboard and other junketing vehicles. No longer does he haggle with drivers over exorbitant fees or unfamiliar coins, but he skims through Europe in his own motor car, off the beaten paths of travel, into the by-paths of interest—wherever his fancy prompts. From the tonneau of his own car he sees Europe, its quaint scenes, its picturesque landscapes, its interesting peoples, as they never can be seen on the conventional tours to which the American abroad is practically limited without a motor car. And this latest luxury of European travel, which otherwise would be difficult and impracticable because of the arduous details of packing and shipping and the endless red tape of customs registrations and clearances, is made possible by a unique service which has very rapidly increased since it came into existance a very few years ago.

It is now possible for a citizen of Chicago, for example, to deliver his car to the local office of a customs broker and forwarding company, and forget all about it until he reaches the foreign port of destination and there finds the car waiting for him at the dock, ready for use, without a thought or care on his part. All the details of freighting, delivering on board cars, United States customs registration, clearance through foreign customs, unpacking, and procuring of foreign driver's licenses, and so on, are attended to by the brokers previous to his arrival. Only those who are experienced in foreign travel can appreciate the bewildering amount of detail and the worries and complications thus saved the client. Even the United States passports, foreign consular certificates, and all the official documents which tend to facilitate the passage at the frontiers of Europe are obtained beforehand without the irritating delays and annoyances of official red tape.

Lots of Red Tape

An idea of the endless detail involved may be gained by considering the steps which are taken when a car is to be shipped to some European port for a summer tour on the continent. After supplying the brokers with the itinerary of the proposed tour and some data as to the weight of the car and so on, the tourist is furnished with an itemized and complete statement of the cost of packing, shipping, unpacking and clearance through foreign customs several weeks in advance of his departure. The car then is turned over to the brokers at least 10 days before the date of sailing. The reason this length of time is required is that although it only takes 4 or 5 days to ship a car from, say Chicago to New York, the steamship companies require that it be alongside the ship for loading at their convenience at least 2 days before sailing, and it must be taken to the steamer in the harbor on a lighter. The preparation for shipment is a larger undertaking that would at first seem necessary. The boxes used are especially travel-worthy. Instead of ordinary shipping boxes nailed together, the boxes used are strong substantial cases made in six sections which are held firmly together by stay bolts and screws. This makes it easy to take the boxes apart and put them together again without damage to either case or its contents. The car is stayed, braced

Path of American Tourist Smooth One

and padded in the box so there is no possibility of its getting loose or becoming damaged in any manner. The boxes are lined with tar paper and covered with tarpaulins to prevent damage from moisture.

Before the car is crated it is inspected and registered by the United States customs officials to avoid delay when it is returned to this country. Otherwise, the car would be held up in customs and the owners subjected to an annoying delay upon reaching an American port. In case the car is a foreign one this inspection and registration is absolutely necessary, for otherwise it would be subject to duty upon its second arrival although full duty had been paid when it was first imported to the country. After crating the car is started upon its transatlantic voyage.

Meanwhile, there has been obtained from the secretary of state copies of both the driver's license and the owner's certificate of registration. These are taken before the local consuls from each of the countries to be visited and certified to by them. The certification is attached to each document by the consul's seal. These then are mailed to the branches of the forwarding company at the port of entry and number plates corresponding with the local requirements are prepared ready to attach to the car upon arrival. The chauffeur's certificate is particularly serviceable, for, unless he is equipped with a certificate, sworn to before the consul, he will in many cases have to spend at least a day or so in showing the authorities that he is a competent driver.

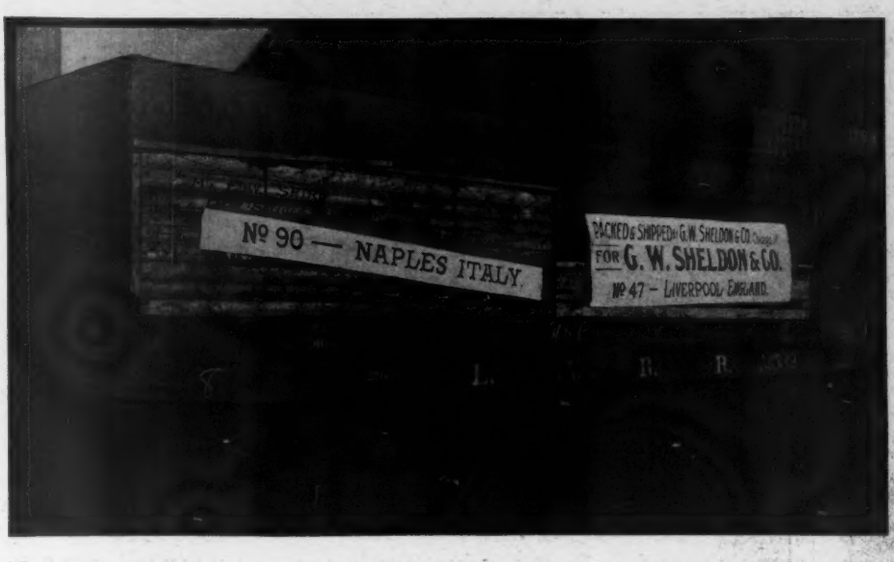
Paying the Import Duty

These arrangements all require some time and it is necessary that the first arrangements for shipping be begun about 3 weeks before sailing. This allows the car to be inspected, packed, shipped, unpacked, and waiting at the dock for its owner. The requirements for registration of cars and drivers vary in the different countries, and unless one's preparations are made beforehand delays are sure to occur.

Those who tour upon the continent will find that at every frontier they are stopped by the customs officials and required to deposit the import duty on the car, to be returned upon leaving the country. Unless one is armed with a recognized official statement of its dimensions, cost, weight, etc., he is subjected to annoying delays. This is further complicated by the fact that the import duty must be paid in the coin of the country which he is entering, and he will often have to hustle out and have his money changed. If the tourist has the service of one of the forwarding companies he can escape this delay and annoyance by taking out a membership in the Touring Club of France, applications for which can usually be obtained from the forwarding company. Before he leaves the United States he deposits with the company funds to cover the import duties in the countries in which he intends to tour. This money is remitted to the Touring Club of France, and upon his arrival in Europe he finds awaiting him a book of coupons, called triptyques, one for each country. Each triptyque consists of three coupons, one of which is torn off and retained by the customs officers when entering a country, and the fact endorsed upon a second. The third is detached upon leaving the country and this fact noted on the second coupon. When the tour is over these endorsed coupons are returned to the Touring Club of France and his deposit refunded.

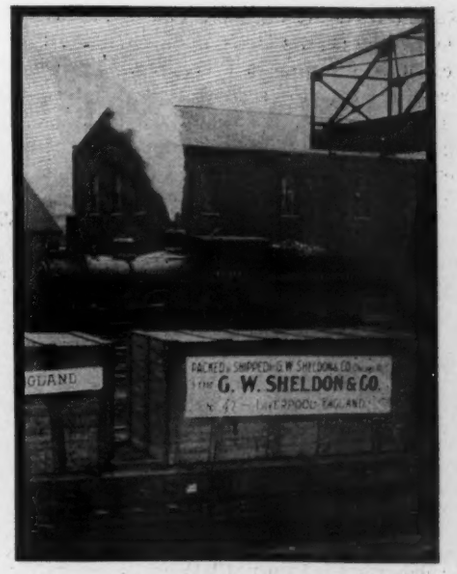
A. A. A. Furnishes Triptyques

While the membership of this club costs only a few dollars, it is said that the club holds at all times over $1,000,000 of deposits from tourists who have taken out these triptyques. These triptyques also can be secured through the American Automobile Association and affiliated organizations and it is well to be provided with an unmounted photograph of the car and five unmounted photographs of the driver. The approximate amount of deposit for a triptyque on a four to seven-passenger car varies in the different countries as follows: France, $6.50 per 100 pounds; Germany, $2.45 per 100 pounds; Holland, 5 per cent of declared value; Belgium, 12 per cent of declared value; Italy, $120; Switzerland, $4.50 per 100 pounds; England, no deposit required.



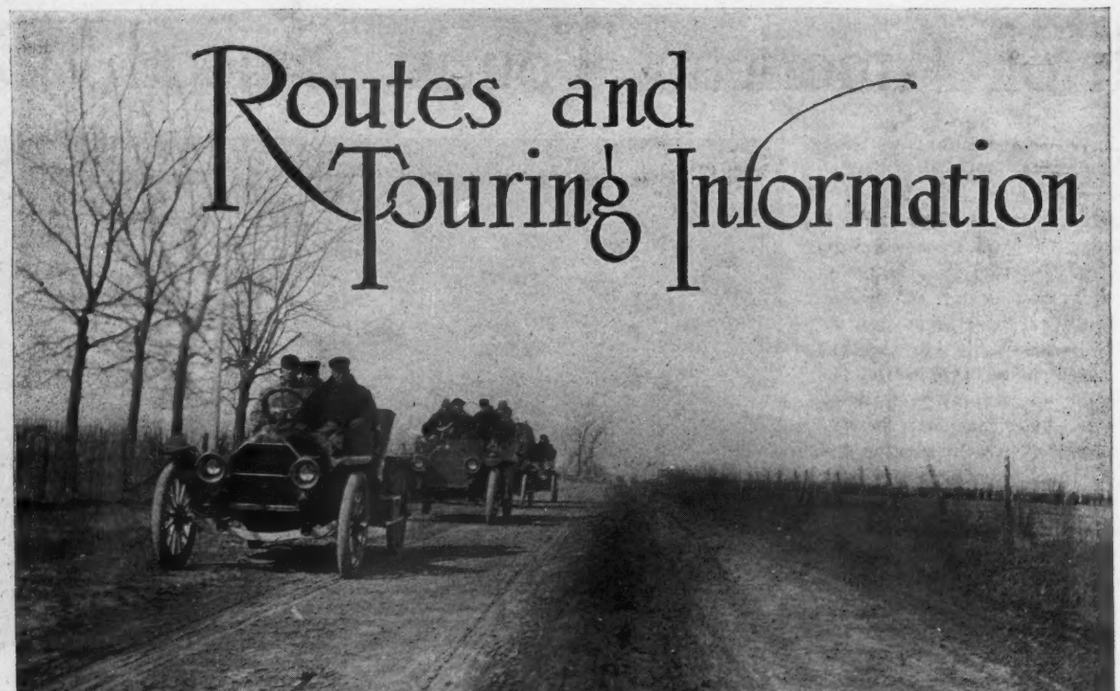
AS G. W. SHELDON & CO., OF CHICAGO, PACK MOTOR CARS TO BE SHIPPED ACROSS

Cars are shipped to Europe in strong, substantial cases, which are held firmly together by means of staybolts and screws, so they may be taken apart and stored for use on the return journey. The case is stayed, braced and padded, so no injury can be done the car; it is lined with tar paper and covered with tarpaulin to protect the contents from damage by weather. Brokerage concerns attend to the thousand and one details as to shipment, securing foreign licenses and removing many of the obstacles from the path of the tourist, so that the outing in Europe is an enjoyable one, devoid of any worry as to the transportation of the car, brought about by assistance of big organizations.



CAR PROPERLY BOXED AND PLACED ON THE TRAIN, READY FOR SHIPMENT

Routes and Touring Information



THE WAUBONSIE TRAIL ROADS ARE KEPT IN CONDITION BY DRAGGING

The Waubonsie Trail

A New Road Across Iowa

SHENANDOAH, Ia.—Editor Motor Age—I have read with a great deal of interest the Routes and Touring Information department, and am sending herewith some photographs which will give the readers of Motor Age a good idea of the Waubonsie trail, the new river-to-river road across Iowa. This roads extends the whole length of Iowa through the southern tier of counties and touches practically every county seat.

It enters the state from the east at Keokuk, Ia., crossing the Mississippi at this point and follows up the Des Moines river to Keosaque, thence due west through Bloomfield, Centerville, Plana, Promise City, Corydon, Leon, Davis City, Lamoni, Kellerton, Mount Ayr, Conway, Gravity, New Market, Clarinda, Shenandoah, Sidney, and Nebraska City, Neb. From Nebraska City the road will go west through Lincoln, Neb., and on toward Denver. On the east it will extend through Bloomington and on east either to Columbus or Cincinnati. The eastern connections have not been exactly figured out yet, but the road is laid out entirely through Iowa and is being marked clear across the state by the official signboards, as shown in one of the illustrations. The telephone poles along the route will be marked by a white band with a black border top and bottom.

The roads through this country are most excellent. They naturally are good to begin with and they are kept in perfect condition by dragging. This is very apparent on all the pictures. Besides the hills have been cut down and the low places graded up until there are very few steep grades. The wooden culverts are all being replaced with permanent concrete bridges. Both the town people and the farmers through southern Iowa are heavy buyers of motor cars and they propose to have roads on which they can travel with pleasure. This Waubonsie trail is destined to be the best of all the famous river-to-river roads across Iowa. It will have the shortest mileage, the least hills, and the best kept road. Considerable parts of it are to be electric lighted, and all of it is to be kept in the pink of condition.

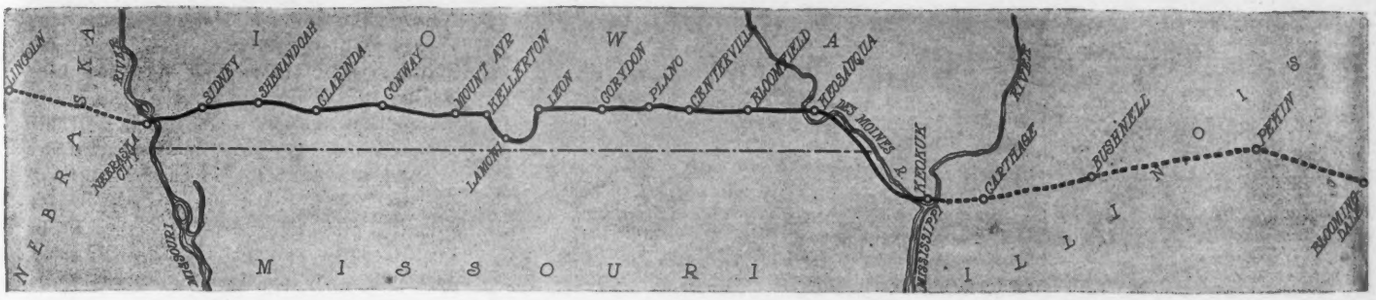
ONE OF THE OFFICIAL SIGNBOARDS

For the benefit of B. W. F., of Cincinnati, O., who desires to tour from Cincinnati to Denver, as outlined in Motor Age, issue April 6, page 24, I would suggest that he go to Bloomington, as suggested by Motor Age, thence via Pekin, Canton, Bushnell and Carthage, Ill., to Keokuk, where there is a good bridge across the Mississippi river. Distance from Bloomington to Keokuk, 146 miles. Then follow the Waubonsie trail to Shenandoah, thence through Randolph, Tabor, Glenwood, Council Bluffs and Omaha. The mileage from Keokuk to Omaha is 305 miles, as against 380 miles by either of the other river-to-river roads.—Henry Field.

CINCINNATI TO FORT SMITH, ARK.

Washington C. H., Ohio—Editor Motor Age—Through the Routes and Touring Information department will Motor Age give me the best route from either Cincinnati or Indianapolis to Fort Smith, Ark.?

For the Cincinnati-Indianapolis-Kansas City portion of the route you are referred to the communication from B. W. F., Cincinnati, Ohio, in Motor Age, issue April 6, page 24, and map in connection therewith. If you are not limited in time and feel so



THE ROUTE OF THE WAUBONSIE TRAIL ACROSS IOWA AND THE EXTENSIONS INTO NEIGHBORING STATES

disposed, Motor Age would recommend that you take one of the northern routes, namely, via Chicago and Clinton, Ia., Omaha to Kansas City; the Indianapolis, Bloomington, Davenport, Omaha route to Kansas City; or the new Waubonsie trail through southern Iowa to Omaha, thence to Kansas City.

If you decide to go via the southern route—St. Louis to Kansas City—you are advised not to attempt it in bad weather. Although there is much travel between these two cities, in wet weather you will find the roads in bad condition. It will be well to drive with caution over the bridges on this route.

From Kansas City to Fort Smith, Ark., you are advised to go through Grand View, Belton, Harrisonville, Lone Tree, Adrian, Butler, Rich Hill, Wales, Nevada, Nassau, Milo, Sheldon, Irwin, Lamar, Jasper, Boston, Cary Town, Flint, Carthage, Webb City, Joplin. From this point to Fort Smith, Ark., the best route will be somewhat roundabout, with fairly good roads, going by way of Pittsburg, Kan., thence to Coffeyville, then to Sallisaw, Okla., to Fort Smith, Ark.

Motor Age has outlined a long route, but the extra distance will more than compensate for the bad going you would experience over the more direct route via Louisville, Nashville, Sheffield, Memphis. You will not be required to register in any of the nine states if you display your home state license number.

CHICAGO-GRAND RAPIDS ROUTE

Chicago, Ill.—Editor Motor Age—Kindly give me the best route from South Chicago, Ill., to Grand Rapids, Mich., and also state the distance, and condition of the roads in general.—D. F. Anderson.

The most popular route the coming season from Chicago to South Bend will be through Valparaiso and La Porte, passing through the towns of South Chicago, Hammond, Highlands, Hobart, Wheeler, Valparaiso, Westville, La Porte, New Carlisle, South Bend; distance 101 miles. Should, however, your choice be via Michigan City, Ind., leave the route above outlined at Hobart, thence through McCool Station, Chesterton, Michigan City, Rolling Prairie, New Carlisle, then South Bend. This is a popular route and improvements have been made on it. Distance, 104 miles, as against the 101 miles of the Valparaiso route.

From South Bend to Grand Rapids, via Kalamazoo, covering a distance of approximately 116 miles, you will find the following route is over variable roads of a gravelly nature, but generally quite good: South Bend, Niles, Summerville, Pokagon, Dowagiac, Decatur, Paw Paw, Kalamazoo, Coopers Corners, Plainwell, Martin, Bradley, Wayland, Corinth, Cutlerville, Grand Rapids.

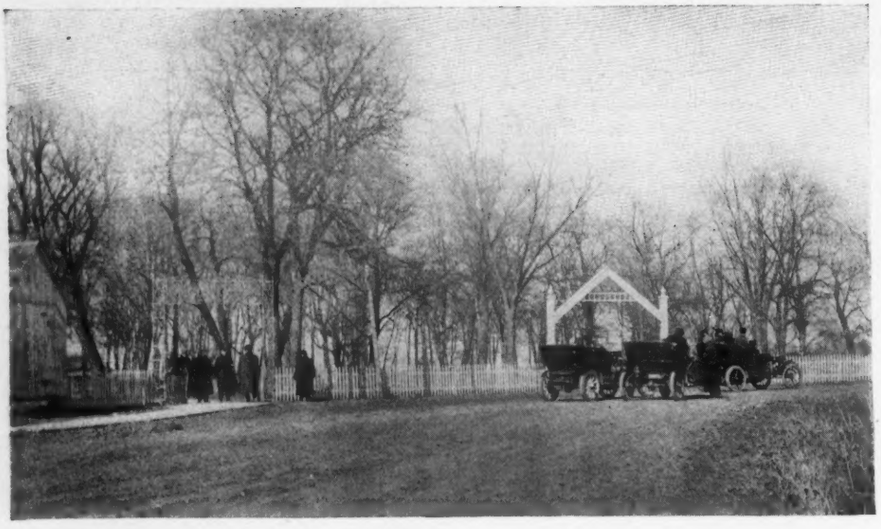
An alternate route and what might be termed an east-coast tour from South Bend to Grand Rapids, follows the shore of Lake Michigan most of the way, and is over all sorts and conditions of roads. Although the trip is a picturesque one it is not recommended in bad weather, as the roads are almost impassable, but in good settled weather you will find it an interesting trip, passing through the Michigan fruit-belt country. The towns passed through are South Bend, Niles, Berrien Springs, St. Joseph, Benton Harbor, Riverside, Coloma, Watervliet, Covert, South Haven, Ganges, Saugatuck, Graffschap, Holland. At this point the route leaves the lake, going through Zeeland, Vriesland, Hudsonville, Granville, Grand Rapids. This lake-shore route totals in distance 130 miles.

A KANSAS TRIP

Girard, Kan.—Editor Motor Age—Will Motor Age, through the Routes and Touring Information department, give me the names of the towns passed through from Eureka to Girard, Kan.—G. T. T.

Motoring from Girard to Eureka, Kan.,

THE HILLS HAVE BEEN CUT DOWN AND THE LOW PLACES RAISED THROUGH THE CORNFIELDS OF SOUTHERN IOWA



THE FARMERS THROUGH SOUTHERN IOWA ARE HEAVY BUYERS OF MOTOR CARS

you will pass through Walnut, Erie, Chanute, Humbolt, Yates Center, and Eureka. In dry weather the roads will be found in good condition.

ST. LOUIS-CHICAGO ROUTE

East St. Louis, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age give me a good route from East St. Louis to Chicago.—S. C. Dodson.

A route the southern portion of which will be found fairly good in settled weather, but practically impassable in wet weather is that laid out by the Blue Book, and goes through the following towns from East St. Louis: Collinsville, Marysville, Edwardsville, Worden, Staunton, Mt. Olive, Litchfield, Farmsville, Glenarm, Springfield. A short stay in Springfield may prove worth while, for here can be seen the Lincoln homestead, which is kept up by the state of Illinois. A custodian always is in attendance for the benefit of the stranger. At Oak Ridge cemetery may be seen the Lincoln monument erected at a cost of $200,000. Out at the state fair grounds is Camp Lincoln, where the Illinois National Guard camp annually.

Passing on from Springfield towards Bloomington, over fairly good country roads in dry weather only, you will go through Riverton, Spaulding, Elkhart, Lincoln, Shirley, Bloomington. From Bloomington to Chicago the trip is over fairly good dirt and prairie roads, the last portion of it into Chicago being over macadam or gravel roads, going through Towanda, Lexington, Chenoa, Pontiac, Cayuga, Dwight, Morris, Minooka, Joliet, Lockport, LaGrange, Chicago. The entire distance totals 335 miles.

MINNEAPOLIS TO FARGO

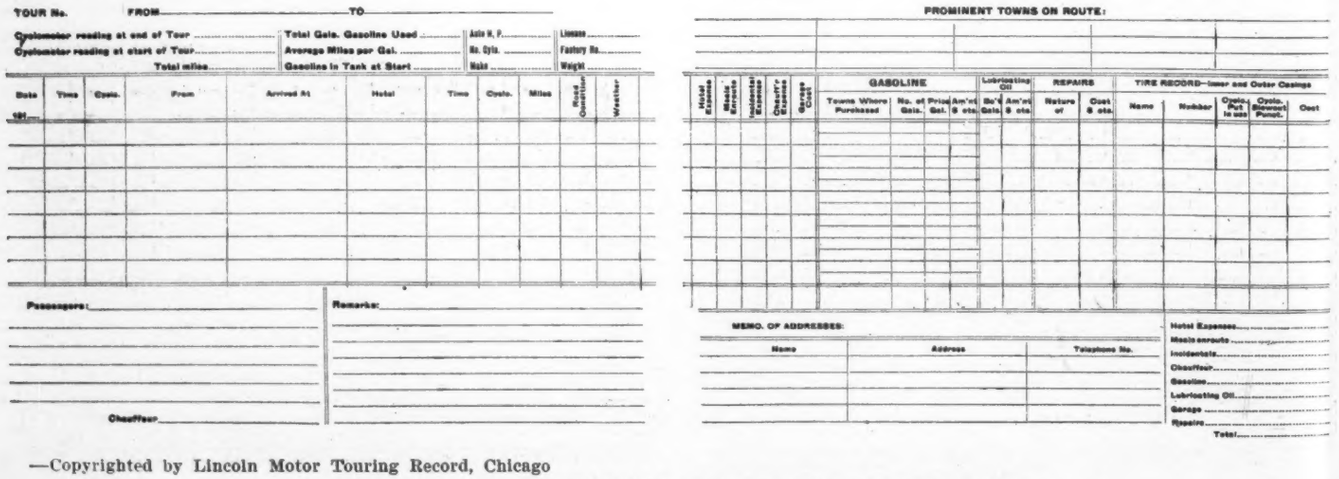
Minneapolis, Minn.—Editor Motor Age—Will Motor Age kindly map out a tour from Minneapolis to Fargo, N. D., by way of St. Cloud and Alexandria? I wish to make the trip the latter part of June and would like to know the itinerary and mileage.—Tourist.

The route to St. Cloud can be followed through Robbinsdale, Osseo, Anoka, Elk River, Big Lake, Becker, and Clear Lake. From St. Cloud pass on to St. Joseph, Cold Springs, Torah, St. Martins, New Munich, Melrose, Sauk Center, Villard and Alexandria, a distance of 101 miles. The route from Torah to Melrose is one of the finest drives in this country, but a more direct one would be from St. Joseph to Avon, Albany, Freeport and Melrose. From Sauk Center another way is to West Union and Osakis, which takes you into the hills. Alexandria is situated in the lake region where bass, wall-eyed and great northern pike abound. The roads in this part of the country are fine and lead around through beautiful woods and skirt many of the lakes. From Alexandria to Fargo, N. D., is 131 miles through Garfield, Brandon, Evansville, Ashby, Dalton, Fergus Falls, Elizabeth, Pelican Rapids, Rollag and Hawley. A more direct route from Fergus Falls via Barnesville is over the black gumbo soil and impassable in or after wet weather, while the route via Pelican Rapids is rather sandy. Motor Age is indebted to Dr. E. Eugene Buell, of Alexandria, Minn., for the itinerary from Alexandria to Fergus Falls.

ROCHESTER TO PHILADELPHIA

Brighton, Ont.—Editor Motor Age—Through the Routes and Touring Information department will Motor Age give me some route information, outlining the best route to follow? I contemplate a trip starting in at Rochester, going through the Lehigh valley from Rochester to Philadelphia. Which would be the better route: Via Watkins and Elmira to Williamsport, Harrisburg, Baltimore to Philadelphia, or go to Watkins, thence to Wilkesbarre, Reading, then Philadelphia? I am more interested in the scenery in the Lehigh valley to Philadelphia, and from Philadelphia on the return trip wish to go to New York, Boston, thence Albany, Syracuse and Cape Vincent. Kindly lay out the best route, with map illustration.—J. H. M.

The best route from Rochester to Philadelphia, according to a representative of the Automobile Blue Book, is via Binghamton, Scranton and Stroudsburg to Philadelphia. Such a route is as follows: From Rochester you will pass through Pittsford, Mendon, Victor, Canandaigua, Flint, Penn Yan, Nimrod, Watkins, Pine Valley, Elmira. From Elmira to Binghamton you will find macadam roads most of the way, passing through Wellsburg, Waverly, Nochols, Owego, Appalachin, Binghamton. From



—Copyrighted by Lincoln Motor Touring Record, Chicago

RIGHT-HAND AND LEFT-HAND PAGES OF TYPICAL TOURING RECORD

Touring Record Helps Novice

Kentland, Ind.—Editor Motor Age—If the novice will take the trouble to obtain and faithfully fill out one of the many forms of touring records that are on the market he will find that it more than repays the time and labor spent on it. Very often in later days he will wish that he had kept some track of the trip, such as the towns passed through, the hotels and road conditions. Above all, an itemized account of the expenses of the tour will be of great value in laying out future trips.

One of the latest of these touring records is illustrated, which shows the two forms on opposite pages. Spaces are provided for entering practically all of the data of the trip. Provisions are made for the names of the passengers and addresses of persons whom it is desired to remember, as well as a liberal space for remarks on incidents of the trip. On the left-hand page may be entered odometer readings at beginning and end of the tour, the total mileage, the amount of fuel used and the average mileage per gallon of gasoline, with details as to the car and the license number in case it is stolen. On this page also are noted such information as the time of arrival and departure from each town, the hotels patronized and road and weather conditions.

The right-hand page is reserved for the expenses of the trip, including expenditures for hotels, meals, chauffeur and garaging and repair of the car. Special tables are provided for itemizing the gasoline and oil and tire repairs. One column which will meet with the approval of those who have had experience with records of this sort is that devoted to incidental expenses. There are so many unforeseen things that involve small outlays that no form could take care of them all. On this page also may be made a recapitulation of the total expenses, which will be found very useful.

The book is of a size intended to fit the pocket, a feature that will appeal to the motorist.—F. D.

ROUTE FROM ROCHESTER TO PHILADELPHIA

Binghamton to Scranton, a picturesque run, the route is over varying road conditions through Great Bend, New Milford, Clarks Summit, Scranton; from Scranton to Philadelphia through Elmhurst, Daleville, Gouldsboro, Mt. Pocono, Scot Run, Tannersville, Stroudsburg, Delaware Water Gap, Portland, Richmond, Easton, Bethlehem, Allentown, Center Valley, Coopersburg, Sellersville, Springhouse, Philadelphia. The portion of the route from Easton to Philadelphia, as given above and which is nearly all macadam, is considered better though much longer than the route via Doylestown.

If for personal reasons you desire to travel via Williamsport and Harrisburg such a route from Elmira is as follows: Elmira, Gillett, Columbia Cross Roads, Troy, Canton, Ralston, Trout Run, Williamsport, Montoursville, Muncy, Milton, Northumberland, Selinsgrove, Port Trevorton, Dauphin, Harrisburg. On this route will be found many good macadam stretches, many bad places, and innumerable dangerous railroad crossings, but with care the trip can be made with safety and the scenic beauties of the trip compensate for some of the road difficulties. From Harrisburg to Philadelphia over good pike road most of the distance the route lies through Steelton, Middletown, Elizabethtown, Mt. Joy, Landisville, Lancaster, Coatesville, Paoli, Ardmore, Philadelphia.

For your return trip via New York, Albany and Syracuse, the following applies: Follow the Delaware river on the Pennsylvania side through Ogontz, Bustleton, Langhorne to Trenton; thence through Princeton and Dayton to New Brunswick. From this point to New York the shortest and most-used route is through Metuchen, Menlo Park, Rahway, Elizabeth, Newark, Jersey City, New York. From New York to Albany is through Yonkers, Tarrytown, Peekskill, Fishkill, Poughkeepsie, Hyde Park, Red Hook, Hudson, Stuyvesant, Rensselaer, Albany. The Albany-Syracuse section is through Schenectady, Amsterdam, Fonda, Little Falls, Herkimer, Utica, Oneida, Fayetteville, Syracuse.

From Syracuse to Cape Vincent, over fairly good roads, the route lies through Cicero, Brewerton, Central Square, Hastings, Colosse, Union Square, Pulaski, Sandy Creek, Lacona, Mannsville, Pierrepont Manor, Adams, Watertown, Brownville, Limerick, Chaumont, Three Mile Bay, Cape Vincent. Here you can make steamboat connection to Kingston, Ont.

Total approximate distance, 754 miles.

TOURING ROUTES IN AND ABOUT DENVER

SAN FRANCISCO AND ITS ENVIRONS

Prepared by The Automobile Blue Book Publishing Co.

HORSEPOWER OF MODEL 16 BUICK

ST. MARYS, N. B.—Editor Motor Age—The new license law for motor cars in New Brunswick is so much per horsepower. I am driving a 1910 model 16 Buick, with cylinders 4½ by 5 inches, valve-in-the-head type. Kindly inform me through the Readers' Clearing House columns the exact horsepower of my car.—A. J. Thompson.

The Buick 1910 model 16 motor is rated at 32.4 horsepower by the A. L. A. M. formula.

MOTOR CAR INSURANCE

Elizabeth, N. J.—Editor Motor Age—Ever since the use of motor-driven vehicles became common the forms of insurance arising out of the use of this new method of propulsion have multiplied until the owner of a machine is bewildered by the variety of protection offered to him.

In many insurance offices it is hard to get reliable information on motor car insurance, as the agents themselves have not given the matter sufficient thought to be conversant with the subject. The man who has just purchased a car wishes to insure it without going to any unnecessary expense. A little knowledge of what benefits the several forms provide will enable any motorist to determine at his leisure what insurance he believes to be most advantageous for him to carry.

Most every owner wishes to insure his car against loss by fire. The policy form used for this carries with it besides fire insurance protection against burglary, theft and the hazards of transportation. It is good anywhere in the United States and Canada and for a small additional premium may be extended to cover the car while in Europe. It insures against loss or damage to the car by fire, arising from any cause whatsoever, explosion and self-ignition. The premium is 2 per cent of the insured value of the car, when kept in a private garage for seven months of the year. If kept in a public garage the premium is 2½ per cent.

Liability insurance applies to injuries to persons and insures the owner against his legal liability for injuries inflicted upon any person or persons by his car. Not more than $5,000 may be collected for injuries to one person and not more than $10,000 for injuries to more than one person in any one accident. Besides being liable for the above amounts the insurance company agrees to defend all suits and pay all court costs incurred by the owner. As is well known, heavy damages can be gotten from the owner of a motor car who has had the ill fortune to hurt someone. There is no fixed rate for this liability insurance. It varies according to the horsepower of the car. Generally it is $25 up to 16 horsepower, with $2 for each additional horsepower up to 37 and $1 for each additional horsepower over 37. Cars operated in and about such cities as New York, Philadelphia and Chicago pay higher rates than those in use in the country.

Some persons desire insurance against damage done to the car by collision with another car or wagon or any other object. The premium for this form is very high, so that many who would otherwise take it refrain on the ground of expense. It covers all damage up to the full insured value of the car and includes damage done to lamps. If the damage amounts to $200 it also includes tires.

Property damage insurance is growing in demand very rapidly. The cost is not heavy, being figured at 25 per cent of the rate charged for liability insurance. It insures against damage done to property of other persons by collision, for which the owner may be liable. It applies to collision with another motor car, wall, bridge, fence, wagon or other object.

Sometimes one hears of owner's insurance and chauffeur's insurance. These consist of an inexpensive form of personal accident insurance designed specially to give additional protection to the owner or his paid driver against personal injuries sustained while operating, being driven in or caring for the car.

Until very recently it was the custom to issue a separate policy for each of the forms referred to above. As some owners carry several kinds of insurance in connection with their cars, having so many separate forms, often in different companies, made just so much more detail to look after.

One of the large companies which writes fire and marine insurance and also casualty lines through a subsidiary company has prepared an entirely new policy which embraces all the forms used by motorists in one contract. The insurer therefore selects those he desires and the rest is rendered void and of no effect. This very much simplifies the insurance problem, for if a claim arise under one or more of the forms there is but one company to deal with, the claims being paid by one check.—W. E. Schram.

TURPENTINE REMOVES CARBON

Moline, Ill.—Editor Motor Age—Among the many carbon removers recommended I have never seen the use of turpentine advised for that purpose. I have been using it regularly for several months past, pouring it in through the spark plug holes or through the carbureter air intake, then running the motor for a minute or so in order to get the liquid spread on the walls and valves; then I let the engine stand over night. Turpentine is cleaner to handle than kerosene; it vaporizes more readily and is less likely to choke the engine when being poured in through the carbureter.

Having made this a weekly practice, it has given the very best results, and the valves have not needed grinding. Recently I have been told, however, that turpentine is bound to be injurious, since it leaves gummy resinous deposits in the cylinders. Has Motor Age any proofs that the use of turpentine is in any way injurious?—C.

If your claims for turpentine are true the suggestion seems a very good one. Motor Age has no record of turpentine being used as a carbon-remover, but cannot see wherein it should be injurious if you have used it for several months without its affecting the operation of the motor. Any honest criticism on the subject from the readers of Motor Age would be appreciated.

The Readers'

EDITOR'S NOTE—To the Readers of the Clearing House Columns: Motor Age insists on having bona fide signatures to all communications published in this department. It has been discovered that the proper signature has not been given on many communications, and Motor Age will not publish such communications, and will take steps to hunt down the offenders of this rule if it is violated.

SUGGEST REAR WHEEL REPAIR

Lexington, Va.—Editor Motor Age—I notice a question by Subscriber in Motor Age, issue April 20, with regard to the rear wheels of his Ford T car coming loose. I had the same trouble with my Ford car, and corrected it by the following simple expedient, and herewith give it for the benefit of all Ford owners.

The breaking of the pin is caused in the following manner: The key first becomes worn and loose, and this allows the driving strain to come on the pin, which never was intended for that purpose, and which consequently breaks, and will allow the wheel to come off if not attended to. It can be fixed in the following manner: First, have a new key of hard metal nicely fitted to the slot; then, with a rattail file cut out the holes in the hub—not in the axle—until they are oval in shape, the long diameter of the oval being in the direction of the circumference of the hub. Now, have pins fitted through the end of the hub and axle so they will fit tightly in the axle, but loosely in the oval holes in the hub. This will correct the fault, as it is impossible for any driving strain to come on the pins.—J. H. Laird, M. D.

RECORD QUESTIONS

Clinton, Ia.—Editor Motor Age—Kindly answer the following questions through the Readers' Clearing House:

1—What is the drag link of a motor car?

2—Who is the American agent of the Mercedes?

3—Where will the races for the stock chassis championship of 1911 be held?

4—Will there be a race for the Savannah grand prix this year?

5—What type of rear axle has the Renault?

Clearing House

EDITOR'S NOTE—In this department Motor Age answers free of charge questions regarding motor problems, and invites the discussion of pertinent subjects. Correspondence is solicited from subscribers and others. All communications must be properly signed, and should the writer not wish his name to appear, he may use any nom de plume desired.

6—What was the fastest time ever made in an American road race of 250 miles or over?

7—Who holds the American records for 50, 100 and 200 miles?—Reader.

1—The tie rod of the steering mechanism is sometimes called the drag link.

2—The Mercedes Direct Agency, New York.

3—The national stock chassis road races will be held at Elgin, August 25-26, 1911.

4—It has not yet been settled whether there will be a Savannah grand prix race for 1911.

5—The Renault car has a semi-floating rear axle.

6—A distance of 415 miles at an average of 70.55 miles per hour, made by Bruce Brown in a Benz at Savannah in the grand prix race is the fastest time ever made in an American road race of over 250 miles.

7—Accepted speedway records are: Fifty miles in 37:55.53 by de Palma in a Fiat at Los Angeles; 100 miles in 1:16:21.90 by Harroun in a Marmon at Los Angeles; 200 miles in 2:43:20.14 by Dawson in a Marmon at Indianapolis. Teddy Tetzlaff in a Lozier broke the 50 and 100-mile records at Los Angeles this year, but they have not been officially accepted by the A. A. A. He made the 50 miles in 36:35⅘ and the 100 in 1:14.29⅕.

KNOCK DUE TO LOOSE CLUTCH

Mer Rouge, La.—Editor Motor Age—Will you please answer through the Readers' Clearing House the following questions:

1—How can I locate a knock in the clutch of my 1910 model 40 Jackson car? It knocks when the speed is 20 miles and above.

2—How deep should the small driving cogs in the differential mesh in the large cogs, and how can one tell when they are right?

3—Where can I get a float gauge to put on the side of the crankcase, so I can tell how much oil is in the case?—Thomas H. B. Andrews.

1—The knock you notice is probably due to a loose clutch, that is, the clutch hub needs bushing.

2—It is assumed that when you refer to the small driving gear and the large gear, you mean the small pinion on the driving shaft and the large bevel gear in the differential. If the gears are adjusted so that they come within about 1-32 inch of bottoming, the best results will be obtained. There is no set rule for this. The usual method of adjusting the gears is to screw up the adjusting nut of the large bevel gear so that the two gears will mesh without any backlash, and yet work freely without binding. It must be taken into consideration that in operation the gears become more or less heated and allowance made for the resulting expansion. If the gears mesh too deep it will cause them to roar, and if too shallow they will rattle.

3—The factory is now equipping the model 40 with such a float gauge as you wish. It is placed on the left-hand side of the crankcase at its lowest point, and extends up through the mud pan directly below the exhaust manifold. The factory will supply the gauge for $2.

ADVICE ON WAYNE MOTOR TROUBLE

Newberry, S. C.—Editor Motor Age—I offer the following suggestions to S. Prince of South Braintree, Mass., who had a communication in Motor Age, April 13 issue, page 24, relative to this Wayne car: His trouble is in either of the following: Rings, vents, valves or the carbureter. Let us take up the rings first. Look at the rings and see how they are made. I had the same trouble and had a new set made, but even then the trouble was not eliminated. I took a look at the rings and found that they had been made for a steam cylinder.

When I called the repair man's attention to this fact he contended they were made right. I claimed that unless they were made concentric, instead of expanding under heat they would contract. I could not convince my man. I went to a neighboring city where I had a concentric set made and the compression was simply perfect, so much better than the other cylinder that I had to have another set for it. This eliminated all my compression troubles. If Mr. Prince finds the rings are made concentric and are at least ¼-inch larger than the piston, then they are all right.

Now look at the vent or peep holes to see if the plug fits properly; then examine the valves. All these being correct, then he is not getting the same mixture to both cylinders. Mr. Prince must remember that the Wayne is a low-compression motor, and either his carbureter is not equi-distant from each cylinder, or it is not properly adjusted. He can determine whether or not the mixture is the same by cutting out one cylinder by disconnecting the secondary wire from the spark plug on one cylinder, and adjusting the carbureter for it. Then connect up the other, and disconnect the one for which the carbureter was adjusted, and see if he can start on the cylinder that was cut out while adjusting the other.

I believe that all cars would run with more power and on less fuel—I mean a lower fuel consumption—if the carbureters were placed further from the cylinders. This would give a better mixture to the cylinders. What does Motor Age think of this? Mr. Prince also may possibly have forgotten to look for a leak past the valve cage top.—J. Alex Meldau.

It is a fact that in some motors better economy and steadier running would be obtained with the longer intake, because the gas and air have not sufficient time to form a homogenous mixture with too short an intake. But this is not the case in all motors; in fact, in some the intake pipe is so long that excessive condensation of the mixture takes place, resulting in poor economy.

BENZINE AS FUEL

Hinckley, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age kindly answer the following questions:

1—Can benzine be used successfully with a Schebler carbureter and Rutenber motor?

2—Would I have to make any changes in the carbureter, and if so, what would these changes be?

3—How many miles will a gallon of benzine run a four-cylinder 4½ by 5-inch motor?—T. A. Haish.

1—The Schebler carbureter can be used on a Rutenber motor with benzine as fuel.

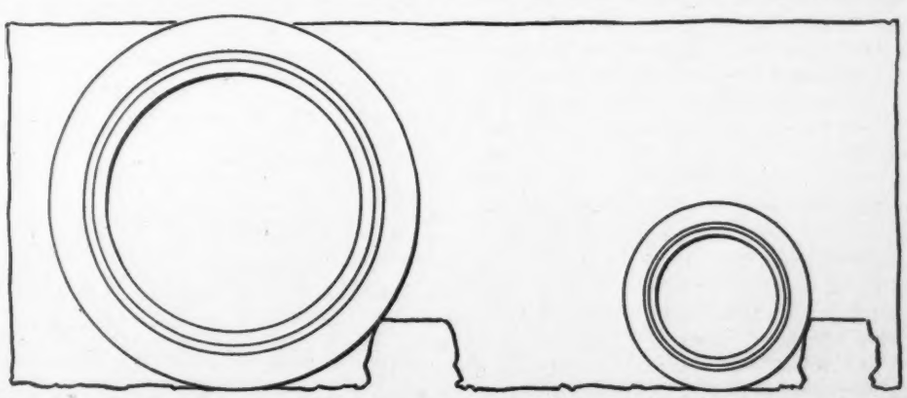


FIG. 1—ILLUSTRATING THE ADVANTAGES OF LARGE WHEELS. MUCH MORE POWER IS REQUIRED TO ROLL THE SMALLER WHEEL OVER THE OBSTRUCTION

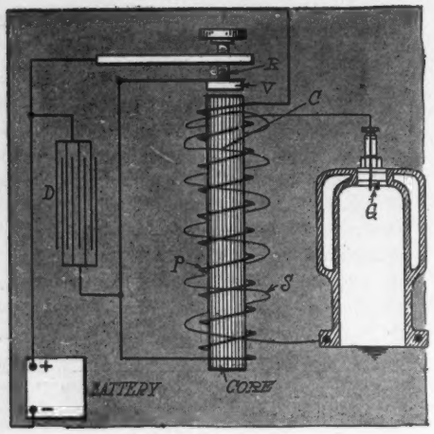


FIG. 2—HOW THE CONDENSER IS WIRED IN THE SYSTEM

The motor will be harder to start, but more miles to the gallon will be obtained and the cost of the fuel per gallon is less.

2—No changes in the carbureter will be necessary, but you will have to start on gasoline or else heat the carbureter in starting. When starting on benzine it will be necessary to raise the float slightly sometimes.

3—No road tests have been made with this fuel in a Schebler carbureter, but the fuel consumption would probably be a little lower than with gasoline. A test of the Rayfield carbureter on a Falcar, with benzine as fuel, was conducted under the auspices of the Chicago Motor Club in November. The test gave a fuel consumption of 18.6 miles to the gallon.

OBJECT OF THE CONDENSER

Iroquois, Ill.—Editor Motor Age—Through the Readers' Clearing House will Motor Age please explain what the condenser in a spark coil is for, and how it is connected in the circuit?—M. V. P.

Referring to Fig. 2, it will be seen that one side of the battery is connected to the contact screw R through the bracket, and the other side to the vibrator V, after passing around the core of the coil and forming its primary winding P. Leaving the condenser out of consideration for the time being, it will be seen that with the vibrator and contact screw in contact as indicated in the diagram, there will be a complete circuit from the battery, through the primary coil and back to the battery. This magnetizes the core and the vibrator is drawn down, breaking the circuit. The core then loses its magnetism and the vibrator is released, again completing the circuit. This action continues as long as current is supplied, the circuit being opened and closed in rapid succession.

The quick opening and closing of the primary circuit, or, rather, the rapid changes thus occasioned in the current flowing through the primary coil, sets up induced currents of high voltage in the secondary winding S. One side of the spark plug is grounded on the cylinder, as is one terminal of the secondary. The other side of the plug is connected to the other terminal of the secondary, and the high voltage in the secondary causes a spark to jump across the gap G in the plug. Without the condenser the arc in the primary circuit which is formed by the breaking of the connection between R and V would not be utilized.

But when the condenser D is connected across this breaking point, the static charge of electricity generated by the break is stored up in the condenser. When the contact is made again, this stored electric energy is discharged by the condenser and flows through the primary winding of the coil with the battery current. The effect is to increase enormously the magnetic field of the core as well as the voltage in the secondary winding and reduce the sparking between R and V.

SIX QUESTIONS ANSWERED

Toledo, O.—Editor Motor Age—Will Motor Age kindly answer the following questions through the Readers' Clearing House?

1—Give cylinder sizes and A. L. A. M. horsepower rating of the Packard 3-ton truck.

2—Give some advantages and disadvantages of the worm drive as applied to pleasure cars and commercial cars.

3—Why do the rear wheels of practically every shaft-driven car toe out at the bottom? Should they not toe in a trifle, as is the case in good carriage practice, or at least stand perpendicular? From a standpoint of appearance it mars a car's looks. Time and time again one sees hundreds of beautiful motor cars practically perfect in every way, but one thing mars the whole assemblage of beautiful lines and finish, namely, the sprawling out of the rear wheels. There is no question but that it would make a decided improvement in a machine to have the rear wheels cant in, like the front ones do. It must show a lack of strength in rear axle designs.

4—Can Motor Age give me any information as to the number of men working in the American Fiat factory at Poughkeepsie?

5—Is not a stationary sector above a steering wheel the most practical and convenient one?

6—In the average motor, what is the crankshaft speed when running at high speed?—H. L. R.

1—The cylinders in the Packard 3-ton truck motor have a bore of 4½ and a stroke of 5½, developing 32-4 horsepower A. L. A. M. rating.

2—It is a source of continued wonderment to mechanical engineers in other industries that motor car designers have been so slow in appreciating the merits of the worm drive as applied to motor vehicle transmission. For in the more recent designs its construction has been improved to such an extent that former objections to it no longer are valid. It is reversible, in the sense that power applied through the end which normally is driven will be transmitted as freely as it will be transmitted in the other direction, and the efficiency of the worm drive has been considerably improved by modern methods of tooth generation.

Abroad the advantages of the worm transmission appear to have gained a greater measure of favor. In England, for example, where it has attained its greatest vogue, it has been used by one company of long standing ever since its inception, and by another for several years, while it also has been more or less successfully applied to several types of commercial vehicles. At present no fewer than eleven concerns are pinning their faith to it, if not for all models, at least for certain types, and it is noteworthy that in several instances it is used in light pleasure cars of the runabout type.

In the United States it has seen successful application to electric vehicles of both pleasure and commercial vehicles forms, and to commercial machines of the gasoline propelled type. But its use appears to have been overlooked by the designers of pleasure cars who are particularly in need of a simple and effective means of transmission where smooth and silent operation are important factors. With the growing use of the high gear-drive, which is made possible by improved flexibility in the motor and by general betterments in chassis design and which commonly are supposed to be independent of the power plant, it becomes increasingly important to secure uniform and simple transmission to the rear axle. Indeed, with cars of the light runabout type, such as are attaining great prominence in the market at the present time, it almost may be considered worth while to design the change-gear with the idea that it is to be used merely as a supplement to the direct drive. From this point of view it would seem that the worm drive has a distinct and useful function to perform, which is being pretty generally overlooked on this side of the water.

Most manufacturers who have adopted the worm drive have done so because of its inherent quality of silence. The worm drive is by nature a more silent mechanism than the toothed bevel, because its method of transmitting power is absolutely continuous, and of a sliding wedge-like kind. The bevel depends for its continuity of action on the accuracy of its manufacture, since by nature its operation consists of a sequence of blows. To an extent the worm and bevel may be compared, respectively, to the propellor and paddle wheel in steamship propulsion.

3—The rear wheels of practically every shaft-driven car do not toe out at the bottom, as you are inclined to believe they do. Actual toeing out at the bottom in the rear wheels of a car is present only in cars in which the rear axle is sprung or the bearings out of adjustment. Some cars have their rear axles so designed that the rear wheels toe in. The Peerless, for in-

stance, is in this category. This, however, requires that the driving shafts in the rear-axle slant downward from the differential and driving-gear unit; and in order that these shafts may slant downward, universal joints must be employed on the drive shafts between the differential and driving-gear unit and the wheels. This construction gives what is known as an arched rear-axle, and patents on the use of the universal joints for this purpose are controlled by the Peerless company. The advantages of the construction, in addition to those which you mention, are: that increased axle strength is obtained, and that dished rear wheels may be used, without having the objectionable toeing out appearance of which you write.

It perhaps is the use of slightly dished wheels with straight rear-axles that gives the rear wheels the appearance of spreading out at the bottom. They have this appearance because the upper part of the wheel being next to the body and the fenders is not so clearly defined as the lower portion. If you were to stand directly behind a car with a straight axle and slightly dished wheel, say between 5 and 10 feet behind it, the wheels would not seem to cant outward at the bottom; but if you were to stand from 100 to 200 feet behind the same car and perhaps stoop down, so that it would be possible to see the front wheels between the rear ones, the rear wheels might seem to cant outward at the bottom because the front ones have such a decided cant inwards. It is most probably for the most part an optical illusion; but many cars have sprung rear axles.

4—The number of men employed at the Fiat plant at Poughkeepsie varies from month to month, but the average is about 600.

5—Yes. The stationary sector above the steering wheel is by far more practical than one that moves with the steering wheel.

6—At 40 miles per hour, the wheels of a motor car 32 inches in diameter will make 420 revolutions per minute; a 34-inch wheel, 395.29 revolutions per minute; a 36-inch wheel, 373.33 revolutions per minute. Therefore, on a car having a gear ratio of 3 to 1 in the rear-axle and 32-inch wheels, the crankshaft speed of the motor on direct drive would be three times that of the wheels or 1,260 revolutions per minute, etc.

TO STOP EXCESSIVE LUBRICATION

Deep River, Ia.—Editor Motor Age—Through the Readers' Clearing House will Motor Age answer the following information:

Would Motor Age advise taking the division plate out of the crankcase and cutting off the dippers on the connecting rods of a model T Ford car to stop the excessive lubrication?—E. C. Ehret.

You might put a valve in the pipe which conducts the oil from the flywheel to the forward end of the case, or, if you desire to take the chances, you might follow the example of one owner and crimp this pipe slightly with a pair of pliers and reduce the flow through it in this manner. Another method is to knock out and remove the baffle plate, P, Fig. 3, as you suggest, and thereby reduce the level in the crankchamber. If the smoking still continues cut the dips off the connecting rods. Go easy, and remember that it is easier to remove than to replace. If you use a drip-feed lubricator to replenish the supply, experience alone will enable you to learn the proper rate of feed to the crankchambers.

NO DIFFERENCE IN WHEELS

Port Huron, Mich.—Editor Motor Age—Through the Readers' Clearing House will Motor Age inform me if it requires more power to drive a car with 37 by 4-inch tires than it does with 36 by 3½, and if any power is lost in using the higher wheels I would like to know approximately the extent of same on a 30-horsepower car.—Andrew J. Murphy.

No. No power is lost on account of the higher wheels. In fact, there is theoretically a slight gain for the higher wheels. In Fig. 1 is illustrated an exaggerated case to bring out this point more clearly. It is evident that if the two obstructions are the same the larger wheel will pass over it more easily.

HOW TO BALANCE A MOTOR

Sauk Center, Minn.—Editor Motor Age—There are many things about a car that need attention, but none more than the motor. Many a fine-running machine is left to jar and vibrate and make a noise, when it could be easily put into the quiet class and be a source of comfort and pleasure to its owner in place of a regular old rattle-trap. Some will ask, How is this to be done? I will tell in plain language what I have found by the extended period of which I have driven a car.

A four-cylinder is the one now in hand. Disconnect all wires from the spark plug, take off the cap of the timer and wash out with gasoline, using a soft rag or piece of waste, being careful not to leave any small part of it in the case or shell. Then pack with soft hard oil or a fine grade of cylinder oil, very thick, and then replace the cap and screw down tightly. Now take out all valve caps and lay so you will not get them mixed in returning after the work, and then grind each valve with flour of emery, first plugging up all communication with the cylinders, valve guides, etc. Remove each valve at intervals and wash off all emery and oil with gasoline, then repeat until a fine bright seat is had all around on the valve. Do not grind too much but just enough to make a bright seat, and no more. This when done properly will not necessitate changing the lifters or valve stems, as the change will be so slight as to be unnecessary.

Do not turn the valves clear around in grinding but about half way and then reverse and turn back, about the same motion as when loosening a bit from wood with the ordinary stock. The repeated washings with the gasoline will soften and remove any carbon that may be on the valve or its seat in cage or cylinder, and allow the emery to do perfect work. You must not press too hard downwards with the grinding tool, but do the work lightly.

After the whole lot of eight valves have been ground thoroughly wash off with kerosene, wiping dry, then take a good, heavy grade of high fire-test cylinder oil and grease over each valve stem and seat. Now remove the packings which were placed to prevent the emery from entering the cylinders and guides, and be careful that none has been spilled within same. Now seat each valve in its own place, being careful to not compress nor stretch its spring, and that its key is properly home. Assemble wires as usual and the job is done. Turn on your gasoline, crank the motor, and if you are not surprised at the partridge purrings of that motor you are no judge of this manifestation of a balanced motor, or you have not done your work as you should have done it. —A. D. Carpenter.

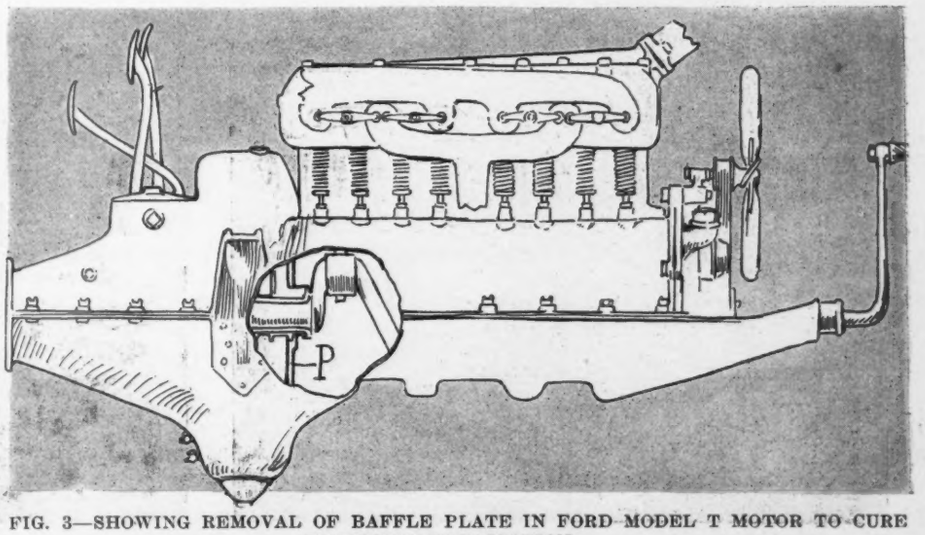


FIG. 3—SHOWING REMOVAL OF BAFFLE PLATE IN FORD MODEL T MOTOR TO CURE EXCESSIVE LUBRICATION

Valve-Grinding Machines

In a recent issue of Motor Age was published an article on valve-grinding which was quite elementary and intended for the motorist, and the amateur and junior repairmen; in this article information is given relative to the more advanced methods of grinding valves, and the accompanying illustrations show the features of different types of power-driven valve-grinding machines employed in some of the motor car factories.

A notable feature of the different machines shown herewith is that in all but one the rack and pinion is employed to bring about the oscillating movement of the valve-grinding spindles. The one exception is the machine employed in the Moline factory, in which the oscillating movement of the spindles is obtained by automatically shifting two driving belts, which are arranged to drive in opposite directions. Another notable feature is that whereas most of the machines require that a workman operate the spindle in a vertical plane that they raise the valve occasionally to distribute the abrasive, the Moline company's machine performs this operation as well as that of oscillating the spindles; and the Franklin company's machine not only does both these operations but applies the abrasive as well.

Moline Valve-Grinder

The Moline company's machine is illustrated in Fig. 1, and shows one pair of cylinders in position and the valves being ground in. This valve-grinder is driven by two belts, one belt H which is crossed, and the other belt K which is straight, the object being that the belts will drive in opposite directions, only one driving at any time, and there being an automatic slide bar G which shifts the belts from one pulley to the other, giving the desired reversal, or back and forward movement, which is necessary in grinding the valve. These belts are on the same shaft as the bevel gear A, which drives the bevel B on

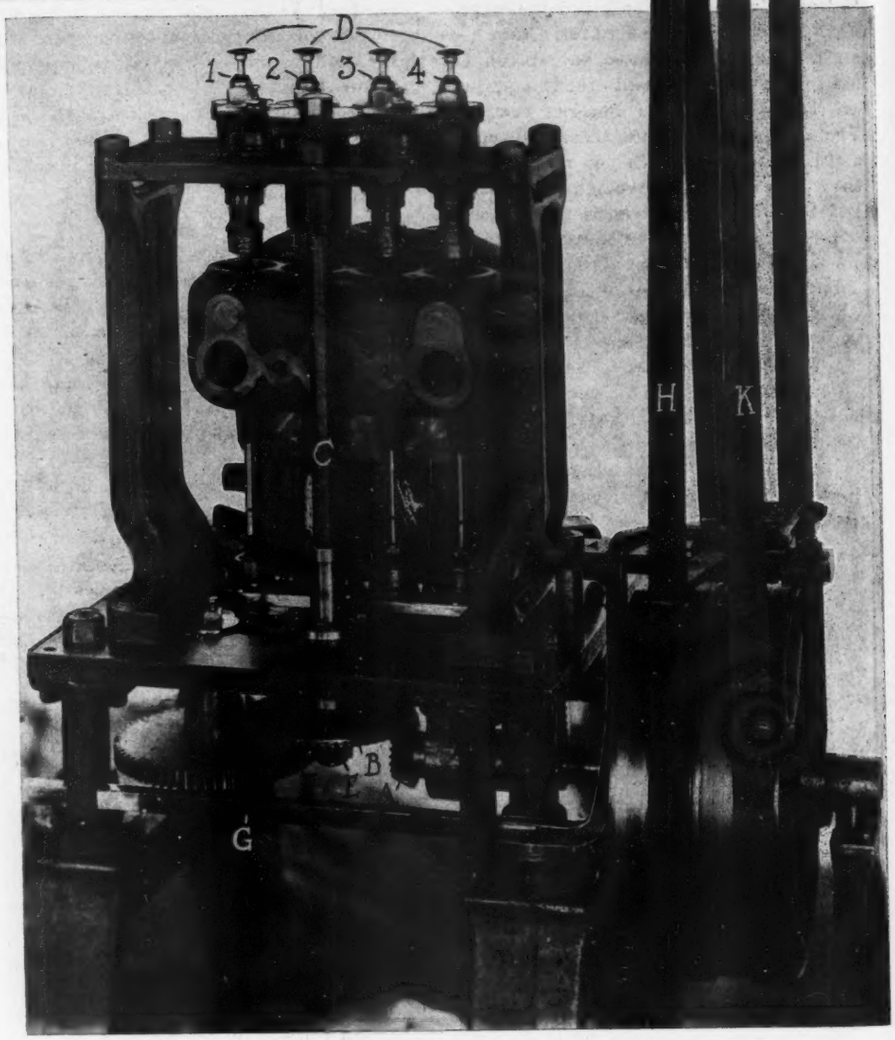
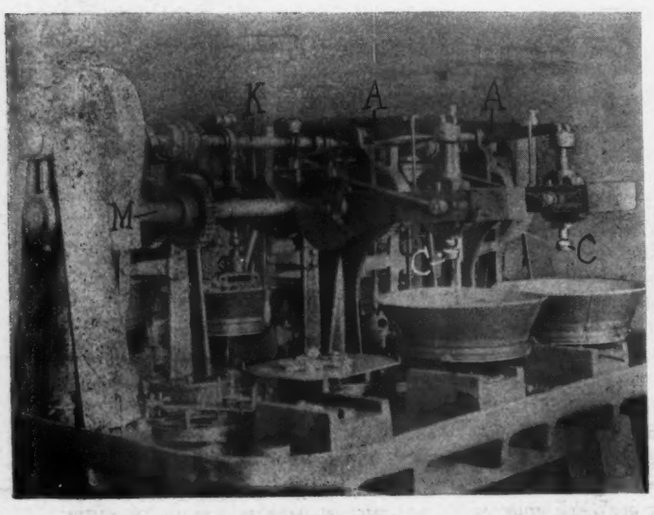
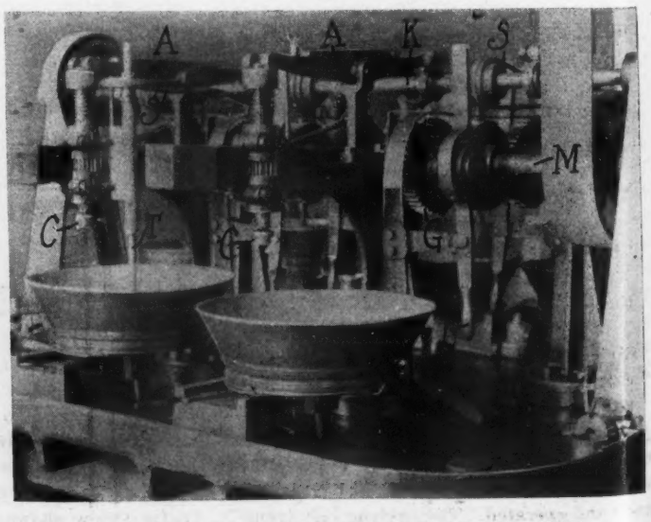


FIG. 1—MOLINE COMPANY'S VALVE-GRINDER, SEATING FOUR VALVES AT ONCE





FIGS. 2 AND 3—TWO VIEWS OF FRANKLIN COMPANY'S MACHINES, WHICH SEAT SIX VALVES IN CAGES AT ONE TIME

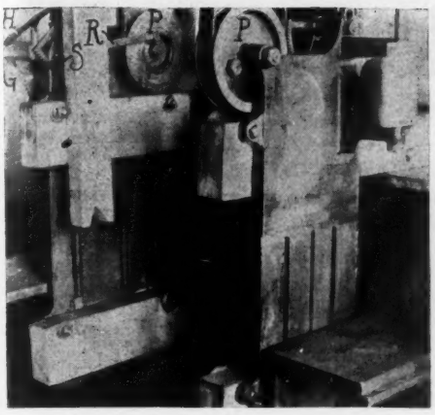


FIG. 4—THOMAS VALVE-GRINDERS

the lower end of the shaft C. On the top of this shaft is a gear which transmits through other gears to the four spindles 1, 2, 3, 4, which carry on their lower ends their screwdrivers that engage with the valves and turn them.

On the bottom of the shaft C is a small pinion E in mesh with a large spur gear F. On the underside of the gear F and not visible is a short vertical chain which contacts with a suitable projection on the shifter bar G, so that when the pin engages with a projection it will carry the shifter bar in one direction and with it the belts, and thus reverse the movement of the grinder. The gearing of this grinder is such that one revolution of the gear F gives four and one-half revolutions on the screwdrivers.

One important feature of this valve-grinder is that a camshaft device is used, with regular lifter rods so that at regular intervals the valves are lifted from their seats, thus giving an opportunity for the grinding powder to distribute itself over the bevel face of a valve and also the bevel face of the valve seat. When grinding the valves they are given six revolutions in one direction, after which they are raised from their seats by the cam action, and then follows an equal number of revolutions in the other directions. This process is continued.

On top of the four spindles, 1, 2, 3, 4, are releasing plungers D, by means of which the screwdrivers are made to telescope within their spindles, so that the cylinders can be put on or removed without any interference. These screwdrivers are made floating so as not to bind the valves in their seats. After locating the cylinder casting on the work table of the machine and clamping it into position, the screwdrivers are lowered into the slots of the valves and the plungers D are then locked. The tension of the screwdrivers downward upon the valves is regulated by coil springs within the spindles.

Misch Valve-Grinder

Fig. 6 represents the Misch valve-grinder, which is most suitable for use in the garage and repairshop. It is very simple in construction and is belt-driven and hand-operated. The driving belt transmits power to the pulley P, which is keyed to the shaft which has the crank disk D on the opposite end of it. A connecting rod R is pivoted at T on this disk and at O on the rack rod K. This rack rod is free to slide in the bearings B and has the rack teeth on the hidden side of it. The teeth of this rack rod mesh with a small pinion gear slidingly keyed to the spindle S. Thus as the disk D revolves and the rackrod slides back and forth, the spindle is made to oscillate. In order to raise and lower the spindle, so that the valve may be raised and the abrasive distributed, the handle or hand lever H is provided.

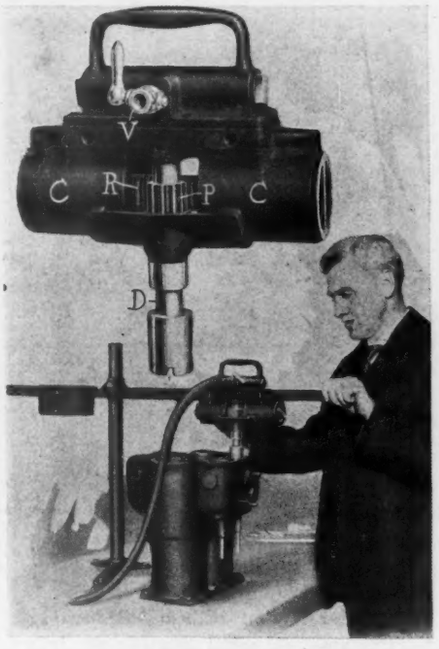


FIG. 5—CLEVELAND AIR-DRIVEN VALVE-GRINDER

A slight deviation from the above construction is found in the machines used in the engine department of the Thomas factory. In these machines the connecting rod R is pivoted on the side of the belt-driving pulley P and transmits reciprocating motion to a gear-toothed sector S, which meshes with a pinion on a horizontal shaft which is hidden from view. A bevel gear G on the opposite end of this shaft communicates with a bevel pinion loosely keyed to the spindle, and a handle H is provided to raise and lower the spindle.

Another Form of Grinder

The Cleveland oscillating valve-grinder, shown in Fig. 5, is a very simple machine which, unlike those previously described, is driven by compressed air. The compressed air operates two opposed pistons which are integral with a single or common connecting rod, and one side of this connecting rod forms the toothed rack R, which meshes with and operates the pinion P secured to the spindle D. The compressed air enters the machine through the valve V and the valves admitting the air to the cylinders C work automatically. Another view shows the machine counterbalanced for grinding valves on cylinders which are removed from the motor base. The lever held by the operator is rigidly attached to the grinder and hinged to an upright post which is bolted to the bench. This lever, of course, enables the operator to raise or lower the grinder at will and to apply pressure as required while grinding the valve to its seat. The portable feature of this grinder is an advantageous one where compressed air is conveniently piped about the shop.

Used by the Franklin

In Figs. 2 and 3 two views of the Franklin company's valve-grinding outfit are shown. This machine is capable of grinding six valves at a time and is entirely automatic in its work, it being but necessary for the workman in charge to secure the end of the valve stem in the chucks C with the valve cage hanging upon the valve, and start the machine. The weight of the valve cage upon the seat is all the pressure necessary, and the head of the valve hangs suspended just over the surface of an abrasive liquid, into which it is automatically dipped at regular intervals. The abrasive liquid consists of emery powder and kerosene, and the liquid is creamy and constantly stirred by a paddle operated by the revolving shaft T. A rack and pinion is used to produce the oscillating motion of the spindle, and the spindle receives the vertical movement for dipping it into and distributing the abrasive on the valve seats from rocker arms A operated off the camshaft K. The main shaft M is belt driven, the camshaft and rack-and-pinion crankshafts are gear-driven from this shaft, and the stirring spindles are driven by round belts S from pulleys on the camshaft. Each device can be stopped or started individually by means of the hand levers L, which throw the driving gears G out of mesh with the driving gears of the mainshaft M.

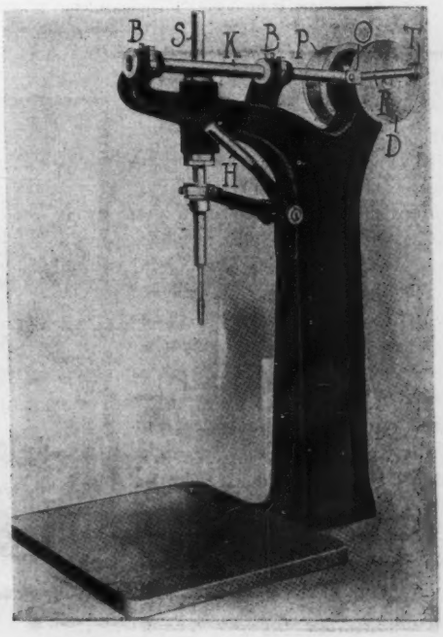


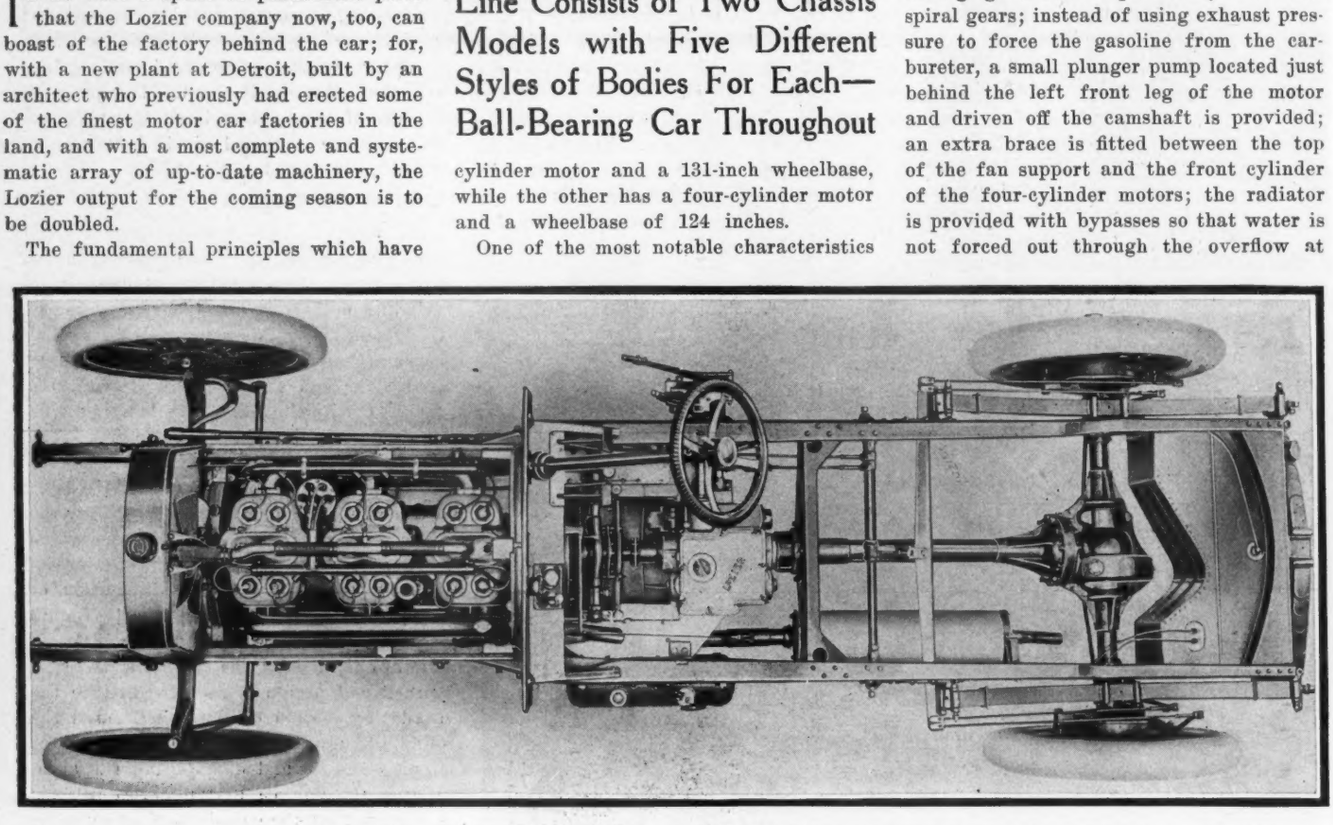
FIG. 6—MISCH VALVE-GRINDER

The Six-Cylinder Lozier's 1912 Leader

Line Consists of Two Chassis Models with Five Different Styles of Bodies For Each—Ball-Bearing Car Throughout

IT IS with a spirit of pardonable pride that the Lozier company now, too, can boast of the factory behind the car; for, with a new plant at Detroit, built by an architect who previously had erected some of the finest motor car factories in the land, and with a most complete and systematic array of up-to-date machinery, the Lozier output for the coming season is to be doubled.

The fundamental principles which have been characteristic of Lozier design for the past 4 years remain unchanged for the season of 1912; and except for a few slight changes which a strenuous and successful racing season has shown to be expedient, the 1912 Lozier models are identical to those of 1911. The changes are more in the nature of refinements.



A PLAN VIEW OF THE LOZIER CHASSIS, SHOWING SYMMETRICAL ARRANGEMENT OF THE VARIOUS FEATURES. THE MOTOR IS SECURED AT SIX POINTS TO THE SIDE FRAME MEMBERS; THE CLUTCH IS ENCLOSED IN THE FLYWHEEL

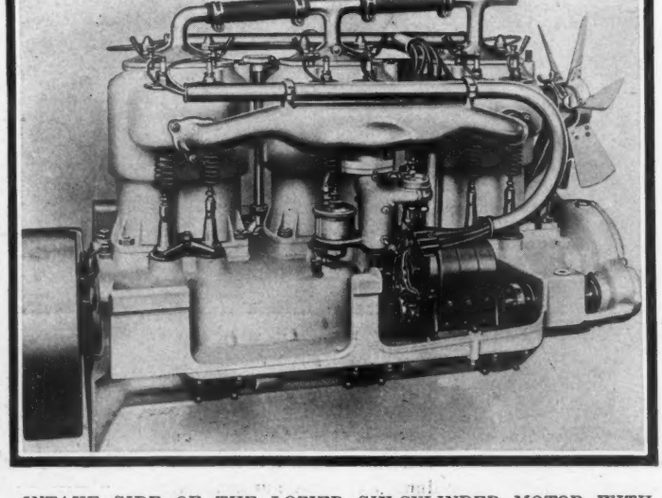
The characteristic features of Lozier design are: a water-cooled motor with vertical T-type cylinders cast in pairs, a multiple-disk clutch inclosed in the flywheel and running in oil; a sliding selective gearset giving four forward speeds and arranged amidships by the three-point suspension; a propellor shaft with one universal joint at the forward end and inclosed in a torsion tube; a floating rear axle; worm-and-wheel steering mechanism, a pressed steel frame mounted on three-quarter platform rear and semi-elliptic front springs; an I-beam front axle, and 36-inch wheels equipped with 4-inch front and 5-inch rear tires.

The line therefore comprises two chassis models and five body styles for each chassis. Both chassis models are alike in every respect except that one has a six-cylinder motor and a 131-inch wheelbase, while the other has a four-cylinder motor and a wheelbase of 124 inches.

One of the most notable characteristics of the Lozier is that it is a ball-bearing car throughout. Annual Hess-Bright ball bearings have been used in the motors since 1908, and in the transmission since 1904.

Changes Over 1911

To enumerate the little changes that have developed during the 1911 season and which are to be found on many of the cars now in use: The spur type rawhide timing gears are replaced by all steel spiral gears; instead of using exhaust pressure to force the gasoline from the carbureter, a small plunger pump located just behind the left front leg of the motor and driven off the camshaft is provided; an extra brace is fitted between the top of the fan support and the front cylinder of the four-cylinder motors; the radiator is provided with bypasses so that water is not forced out through the overflow at exceedingly high speeds. Adjustable clutch and brake pedals are fitted. A large grease cup is attached to the left side frame member with a flexible tube duct to the universal joint housing, so that the ball-and-socket joint at the front end of the torsion tube and the universal joint of the propellor shaft may be conveniently lubricated. A special bracket is provided for the ignition and lighting batteries inside of the right side member of the chassis frame, which is so arranged that the battery is accessible by lifting the floor board of the tonneau; the battery wires are inclosed in water-proof conduit; and substantial connections are so arranged that either the body or motor may be removed from the chassis without disturbing the incased chassis wiring.



INTAKE SIDE OF THE LOZIER SIX-CYLINDER MOTOR WITH MAGNETO SUPPORTED ON THE WEB OF THE CRANKCASE

An improvement is made in the attachment and adjustment of the front ends of the radius rods. Block reinforcements have been inserted in the channels of the frame opposite the engine legs to increase their rigidity at these points. A new cut-out is fitted which is very effective as a warning signal; and on the six-

Few Changes Made in the New Models

Refinement of Detail Marks Work of Designer in Preparing Cars for Next Year's Market—Racing a Good Teacher

cylinder motors provisions are made so that endless fan belts can be replaced if necessary by simply loosening a telescoping joint in the shaft opposite the driving pulley. To complete the list, in the fore-door body types unique facilities are provided for carrying the acetylene in an almost invisible case, arranged half below and half above the left running board.

Details of the Motor

The motors are practically identical except that one has six cylinders with 4⅝-inch bore and 5½-inch stroke, is 7 inches longer and has a fan driven by a V-belt from a pulley on the shaft that drives the water pump. The four-cylinder motor has a 5⅜-inch bore and 6-inch stroke and a fan which is driven by a friction disk, spiral gears and vertical shaft from the crankshaft. The cylinders are mounted on an aluminum crankcase which is supported at two points on each side of the four-cylinder motor. The upper portion of this case has lateral webs which extend horizontally outwards to the side members of the frame. These webs form a support for the magneto on the right and the oiler on the left and make unnecessary a mud pan carried by most cars. There is a removable lower portion to this case which serves as an oil pan for the splash lubrication, and this lower portion has a flanged rear end to which is bolted another aluminum pan section which extends under the flywheel and clutch mechanism and is connected to the flanged front end of the transmission gearcase to complete the under pan assembly.

The crankshaft is mounted on three large Hess-Bright bearings in the four-cylinder motor and four similar bearings in the six; these bearings are strapped to the upper portion of the crankcase, and so designed that the shaft may be removed without removing the cylinders from the case. Connecting rods have white metal crankpin and bronze bushed wrist pin bearings; and pistons have four rings and are extra long.

Accessibility Aimed At

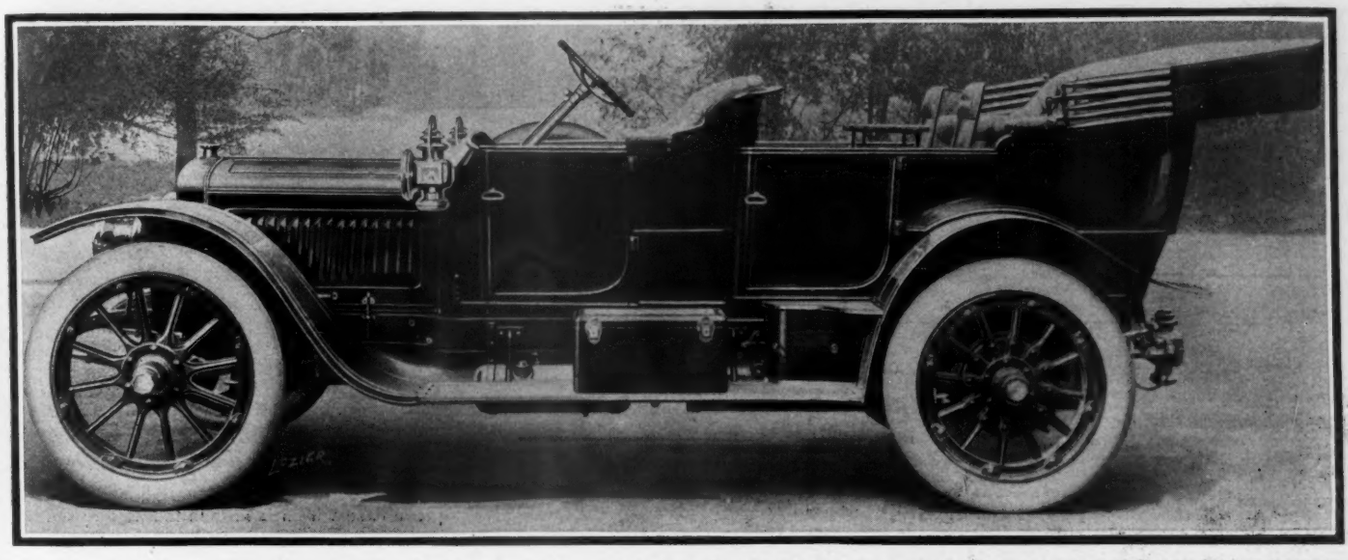
As shown in Figs. 2 and 4 accessibility and simplicity are important features of Lozier design, and the external accessories are most symmetrically arranged. On the right or intake side of the motor are: the carbureter, the magneto and commutator; all getatable for inspection or adjustment. On the left or exhaust side, and even more conveniently arranged, are the lubricator, breather and filler pipes, water and gasoline pumps.

Lubrication of the motor is splash, with a constant level maintained by a force feed oiler which is located just in front of the left rear leg of the motor crankcase and which is driven by gears and a short shaft penetrating the side of the crankcase and communicating with the camshaft. There are four leads from this oiler, one to each compartment of the crankcase, one to the timing gear case from which the superfluous oil drains back into the crankcase, and one to a sight feed on the dash and back to the motor crankcase. The splash maintained in the crankcase lubricates the cylinders and all internal working mechanisms.

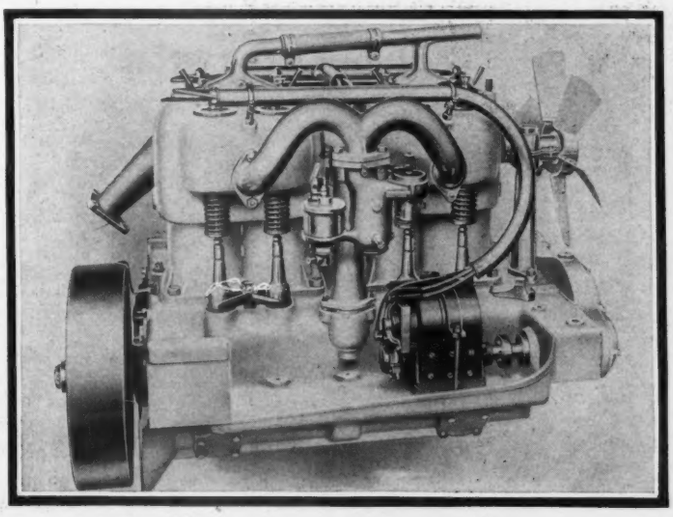
There are scoops on the end of the connecting rods by means of which oil is forced through the drilled crankshaft into oil collectors arranged opposite the ball bearings for their lubrication. In addition to the force feed lubricator which is very small and compact, there is an auxiliary oil tank with 2½ gallons capacity which is suspended from the side members of the frame.

Location of Auxiliary Oil Tank

On the touring cars this auxiliary tank is on the left side and in the Briarcliff and torpedo types it is on the right, where the



THE 1912 LOZIER SEVEN-PASSENGER FOREDOOR TOURING CAR WHICH HAS A 51-HORSEPOWER SIX-CYLINDER MOTOR, MULTIPLE-DISK CLUTCH, A FOUR-SPEED SELECTIVE SLIDING GEARSET, A FLOATING REAR AXLE, AND TIRES MEASURING 36 BY 4 INCHES



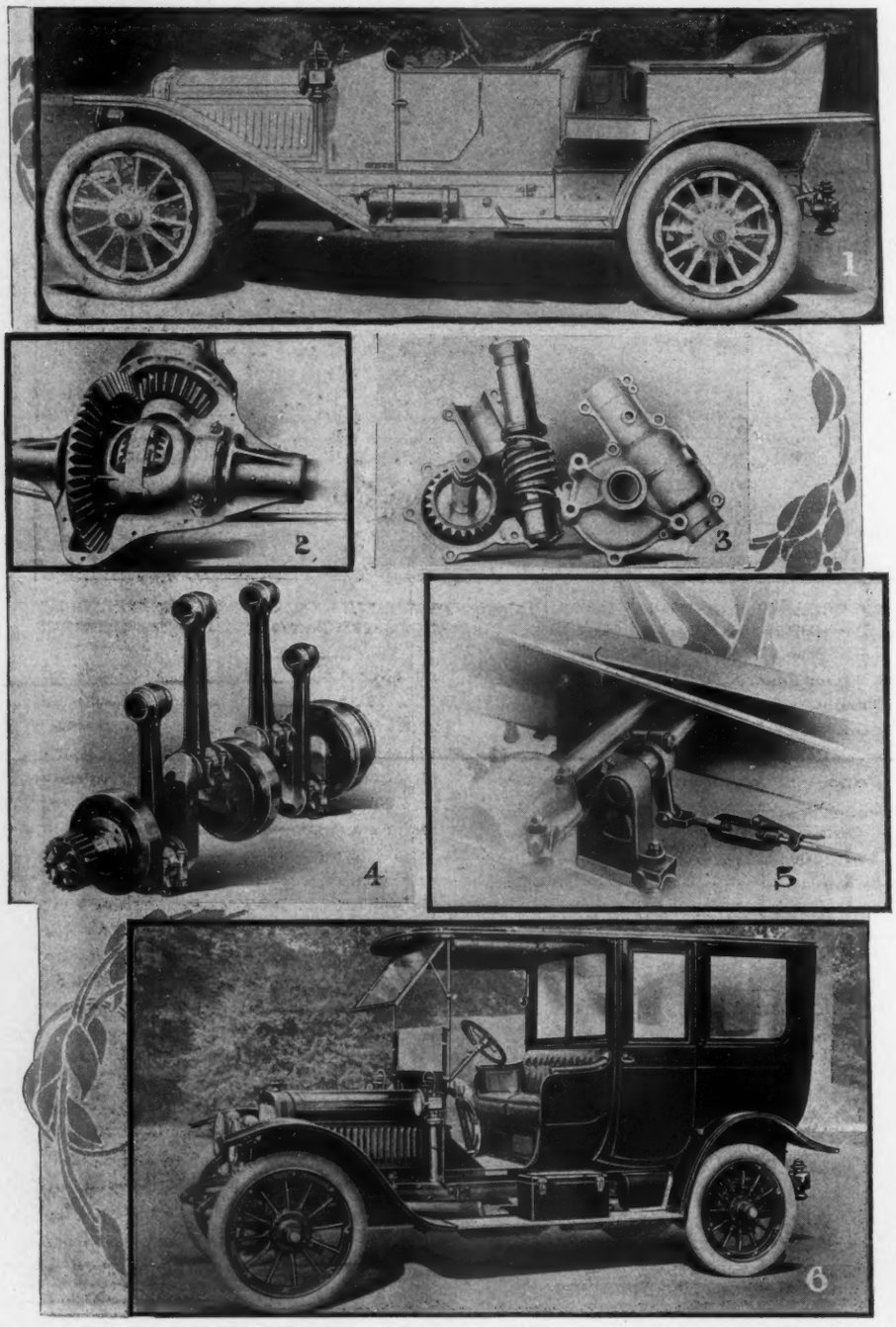
THE LOZIER FOUR-CYLINDER MOTOR WHICH IS RATED AT 46 HORSEPOWER, WHICH GREATLY RESEMBLES THE SIX

hand-pump for forcing the oil to the motor crankcase can be conveniently reached by the driver. The small force feed oiler is filled automatically from this auxiliary oil tank.

Double ignition is provided with a Bosch high-tension magneto furnishing current for a set of plugs over the intake valves, while a storage battery, a single unit coil in front of the dash under the hood, and a combination timer and high-tension distributor generate a spark for the plugs arranged over the exhaust valves. The coil used in the battery system is a single-unit vibrating type and is so arranged in the dash that upon opening a hinged door conveniently arranged at the back or exposed side of the dash, gives access to its adjustments and permits of the unit being readily removed. All high-tension cables are thoroughly protected from the motor by a brass conduit with hard rubber bushings to prevent fraying of the insulations and short circuits, and the improved Connecticut three-way switch is fitted to the steering column.

In the cooling system a cellular type of vertical flat tube radiator, a gear and shaft-driven centrifugal pump, a belt or gear-driven fan and simple water manifolds are features. Water is taken in the bottom of the radiator, forced into the waterjackets just below the exhaust valve and makes its exit at the top of the cylinders where large aluminum plates with integral water pipe connections are provided, which may be readily removed should cleaning of the jackets become necessary. Short hose connections are provided between each pair of cylinders to facilitate the removal of any pair of cylinders without disturbing the water connections of another pair.

Features of the Lozier Construction



1—THE 1912 FIVE-PASSENGER LAKEWOOD MODEL WITH ITS COMBINATION SIDE DOOR AND CHAUFFEUR'S SEAT. 2—BEVEL DRIVING GEARS AND DIFFERENTIAL MECHANISM OF LOZIER REAR AXLES AS EXPOSED WHEN COVER OF CASE IS REMOVED. 3—THE WORM AND WHEEL STEERING MECHANISM WITH CASE DISASSEMBLED. 4—BALL-BEARING CRANKSHAFT OF LOZIER MOTOR WITH BEARINGS AND CONNECTING RODS ATTACHED. 5—SHOWING CONVENIENTLY OPERATED LOCKING TURNBUCKLE PROVIDED ON BRAKE-RODS TO FACILITATE ADJUSTMENT. 6—THE FOUR-CYLINDER 46-HORSEPOWER LOZIER LIMOUSINE IN ITS 1912 FORM

Features of the Clutch

Power is transmitted from the motor by a multiple-disk clutch which is encased in the flywheel and runs in oil. This clutch comprises thirty-five hardened steel disks and is equipped with ball clutch collar and thrust bearings. A short universal coupling, shown in one of the illustrations, is provided between the clutch and gearset, which may be readily disassembled for the separate removal of either of these features. The gearset is enclosed in a one-piece case which is suspended at two points directly from the side members of the frame in front and at one point in the center of a heavy cross member at the rear. Both shafts of the gearset are in the same horizontal plane and may be readily removed through the top of the case after loosening the annular ball bearings in which they are mounted. A large cover secured by a series of winged nuts is provided at the top of the case for the inspection, lubrication or repair of gears and shafts, and these winged nuts are on the end of ball-headed studs so arranged in slots in the cover and in the main part of the case that in removing the cover one has but to loosen the nuts and swing the studs out of the slots; thus there is no danger of nuts or bolts being lost or perhaps dropping into the gearcase and doing considerable damage.

Keeping Out the Dust

The torsion tube which incloses the propeller shaft is of steel tubing and telescopes at its forward end into a large bronze sleeve. A leather boot covers this telescoping joint so that lubrication is maintained and dust prevented from entering. The forward end of the bronze sleeve that receives the propeller shaft is enlarged and forms a part of the ball-and-socket joint that encases the universal at the front end of the propeller shaft. The rear axle is a floating bevel gear type, with bevel gear differential mechanism, and the driving and differential gear unit is mounted on annular ball bearings and

may be readily removed through the top of the case without disassembling the axle from the car. The rear axle gear housing is of cast steel with an aluminum cover. The rear axle tubes are riveted to this housing and support the wheels on their outer ends.

The driving shafts communicating between the driving and differential gears and the wheels are inclosed in these tubes and have clutches at their outer ends which communicate with notches in the wheel hubs. The spring seats as well as the rear end of the radius rods have a free-bearing on the axle tubing, thus all driving strains are eliminated from the springs and all torsional strains from the radius rods. The radius rods are I-beam drop forgings, with a bronze bushed bearing on the rear axle and having grease cups for its lubrication and a substantial adjustment provided at their forward ends.

The frame is of pressed steel, raised over the rear axle, is wider and deeper in the center to increase the strength at this portion, and is narrowed and curved inward at the front opposite the dash to give a greater turning radius to the front wheels.

As for running gear details, brakes are of the internal and external type, operating on the rear wheel drums and large equalizers passing through the side members of the frame are provided. The rods communicating between these equalizers and the operating levers run parallel with the frame in a neat and symmetrical fashion, and the adjustments for all brakes are most accessibly located. Grease cups and oil cups are provided to facilitate lubrication of all out-board bearings, including the spring shackles, brake pin bearings, steering knuckles, and all joints of the steering gear and mechanism. Connecting links of the steering gear are arranged above and behind the front axle and run parallel with the frame members; the front axle is an I-beam drop forging with ball bearing steering knuckles and adjustable ball bearings are provided for the wheels all around.

Control of the car is conventional. Spark and throttle levers are mounted on a stationary sector over the steering wheel; the gear changing and emergency brake levers are arranged at the right of the driver's seat; the clutch and service brakes are operated by pedals, and patent throttle and cut-out pedals are provided.

MOTOR CAR LITERATURE

Motorists planning to tour on the Pacific coast will find the Washington State Automobile Tour Book, compiled by G. F. Beck, Seattle, Wash., of great assistance, covering as it does practically all the routes in the state of Washington.

The Welch Co., of Detroit, Mich., has issued its 1911 catalog, featuring its line of Welch-Detroit cars. The catalog is along conventional lines with a brown double cover. Models T and U are illustrated, together with parts illustrations.

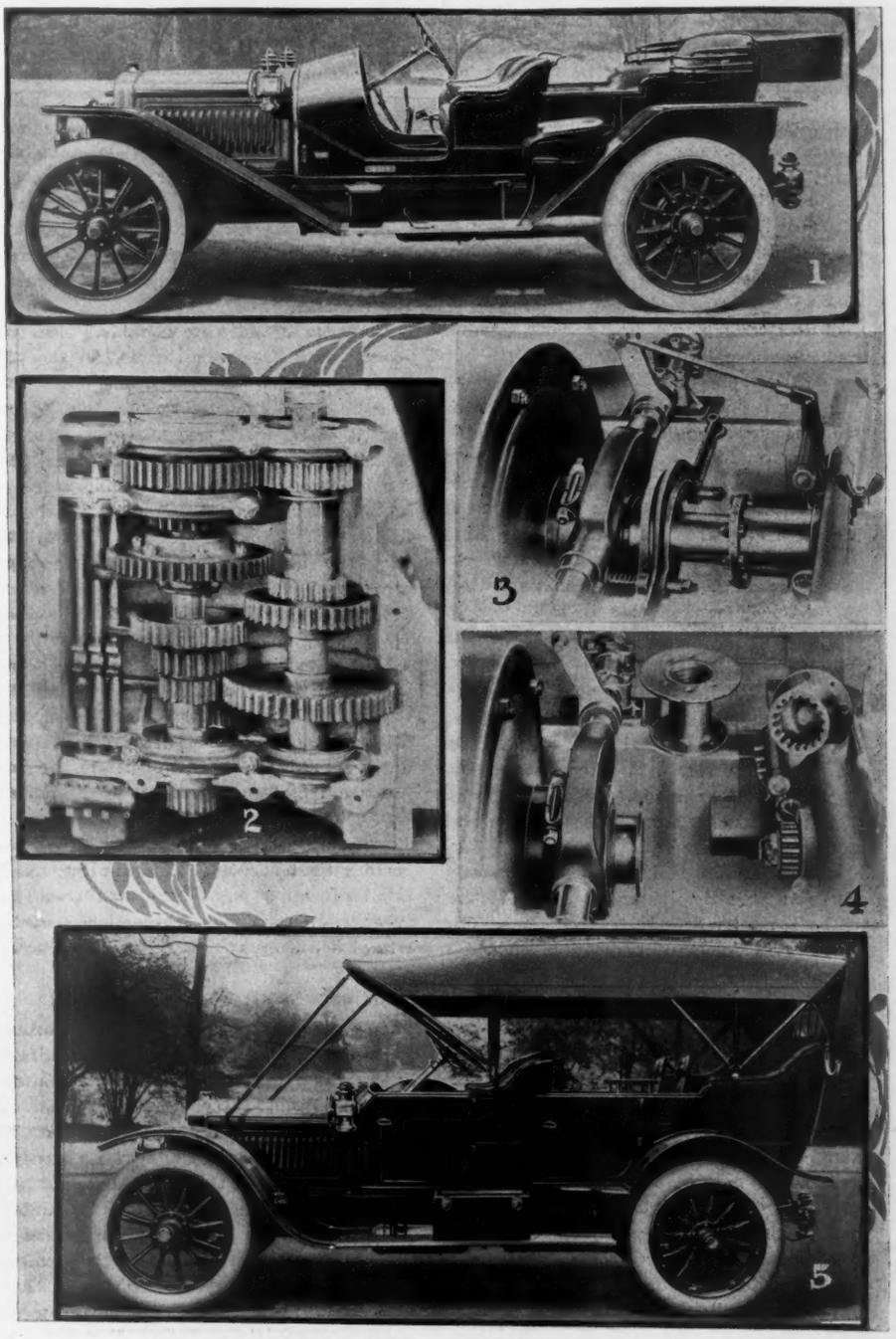
On the latest Mercer catalog is an art cover showing a landscape. The design is simple but very attractive.

An interesting catalog to manufacturers contemplating factory additions is that of the United States Metal Products Co., in which it illustrates the Rapp rolled steel window frames.

"The Great White Tread" is the title of a recent catalog on Goodrich tires. The cover is an Egyptian landscape with the Nile, pyramid and sphinx in the background, and an enormous tire in the foreground. The design is a most creditable one.

The Chicago School of Motoring has a well illustrated catalog illustrated with photographic reproductions of the different departments of the school, its equipment, etc.

Some Refinements in the 1912 Lozier



1—THE FOUR-CYLINDER BRIARCLIFF MODEL WITH AN AUXILIARY CHAUFFEUR'S SEAT ON ONE SIDE. 2—SHOWING ARRANGEMENT OF THE GEARS IN THE FOUR-SPEED SELECTIVE LOZIER GEARSET. 3—SHOWING FEATURES OF THE CLUTCH OPERATING MECHANISM OF THE LOZIER WHICH COMPRISES A CLUTCH BRAKE, CLUTCH THRUST BEARING AND TRUNNION, UNIVERSAL COUPLING AND SAFETY GEAR SHIFTING DEVICE. 4—UNIVERSAL COUPLING BETWEEN CLUTCH AND GEARSET, DISASSEMBLED TO SHOW DETAILS OF DESIGN WHICH FACILITATE INDEPENDENT REMOVAL OF EITHER CLUTCH OR GEARSET. 5—THE LOZIER SEVEN-PASSENGER

Our Foreign Relations

AMERICAN representatives in Germany have made interesting reports through the daily consular and trade reports on the tire situation in the fatherland.

From Germany Consul Ralph C. Busser, of Erfurt, writes: "There is a large and increasing demand for rubber tires in this district, owing to the flourishing condition of the three important motor-vehicle factories at Eisenach, Arnstadt and Apolda, respectively, and to the growing use of such vehicles for purposes of pleasure and business. There are also a number of bicycle factories in the district, and while there is no popular craze for wheeling here to over-stimulate the industry, there is a normally large output required to supply the steady demand on the part of those who purchase them for reasons of business or economy, their use in riding to and from factories and offices being more general than in the United States.

"While the demand for motor and bicycle tires is largely supplied from German sources, considerable business is done in foreign tires. The manufacturers of an English tire supply the German trade from a branch factory in Germany. A French make of tire, however, is being well sold in Germany, without such expatriation of the industry. American tires are little known in this district. A 32 or 34-inch tire is the most frequent size for low-hung touring cars in this region.

Growing Demand for High-Grade Tires

"German motor car factories procure their tires, as a general rule, direct from the manufacturers, with whom yearly contracts are often made. The factory in Eisenach manufactures both pleasure and industrial vehicles, and the growing use of motor trucks and drays in Germany causes a steadily increasing demand for the best quality of solid rubber tires. The factories in Arnstadt and Apolda specialize more along the line of smaller cars, chiefly those for recreation purposes, their most popular machines selling at less than $1,000. As the most scenic and exhilarating motor car trips in Germany are over roads which traverse hilly and mountainous regions, like Thuringia—in this consular district—the majority of touring cars turned out, in this district at least, combine relatively light weight and high power, being built especially for climbing, and, consequently, in their equipment there is a demand for heavy tourist tires that will stand the strain of traveling over mountain roads, prevent skidding, and be reasonably impervious to snow, ice and other adverse weather conditions.

"With the education of the motor public, there is an ever widening market for high-grade tires, which is an encouraging sign for the American manufacturers who have taken the lead in the invention of processes and devices for solving the numerous tire problems.

American Tires for Germany

"Local dealers express doubt of American tire manufacturers being satisfied to do business on the basis of prices prevailing here, being used to a larger margin of profit at home than the German manufacturer can obtain in Germany. That German prices, however, yield a fair profit is evidenced by the uniformity of prices of competing standard tires. To a large extent, the different price lists quote similar charges for corresponding styles and sizes of pneumatic tires. Thus, it would seem that the companies controlling this market have some agreement or understanding among themselves as to prices of the tires.

"The tariff duty upon rubber tires imported into Germany is $14.28 per 220 pounds. This tax, together with the freight from the factory in the United States, must be taken into consideration in any effort at competing with the tires manufactured in Germany. To do business here in American tires it must be clearly demonstrated to the German buyers that they are not only superior to the tires already on the domestic market, but are really worth the difference in price that is asked.

"No American manufacturer can hope successfully to compete here unless, by reason of larger scale production or the utilization of superior patented machinery not available to his competitors, he can produce equally good tires at a substantially lower cost. In this connection it may be interesting to know that an important tire concern in this district, which has built up a large American trade, on account of its cheap prices, has recently established a branch factory in the United States.

Requirements of the Metric System

"Whether or not any of the American companies produce a tire whose manifestly superior qualities are sufficient to overcome the disadvantage of higher price on account of freight and tariff, can best be determined by having one of its experts visit Germany for the purpose of getting, at first hand, the testimony of disinterested dealers and other experienced users as to the relative worth of the various tires on this market, as shown by thorough tests in actual operation under all kinds of conditions.

"A handicap to American trade in Germany in mechanical attachments, fixtures and appliances is the disinclination of some of our manufacturers to conform the patterns of those built for export to the requirements of the metric system, which is in vogue here. This was, again, recently brought to the attention of the writer by a local dealer in rubber tires, who mentioned the necessity of having American tires, made for this market, conform exactly in dimensions to the German vehicle wheels and rims. Furthermore, the catalogs and price lists for use here should give measurements in centimeters and millimeters, the weights which the tires will sustain in kilos, and the prices in marks and pfennigs.

Selling Methods in Germany

"The rubber tire manufacturers sell direct to the motor car and other vehicle factories in this district. They also do a large business with the dealers in motor cars and bicycles and their accessories. Some of the smaller bicycle factories purchase tires from the wholesale dealers.

"Unless special credit is arranged for, the customary terms granted by the German tire manufacturers are 30 days, with 2 to 3 per cent discount for cash. Where longer credit is extended it may be on open account or note, according to the financial standing of the customer and his past business transactions with the manufacturer. It is difficult to get business when cash is required with order or against documents, as the buyer of rubber tires is seldom willing to pay for them until they have been received and examined or tested. Furthermore, when a sight draft goes with bill of lading the German buyers are more disposed to accept the draft if it be payable in Germany to seller or his representative instead of to the home office in the United States, as they prefer to have the transaction governed by the law with which they are familiar than by American law. As an illustration of how this difficulty is met, the selling organization of a foreign tire company in its advertising matter designates the German city where it has its receiving and shipping depot as the forum for governing all legal questions arising.

Tire Guaranties

"To give an idea of the kind of tire guaranty offered by some German concerns, the following example is given substantially as it appears in the catalog of one of the largest domestic manufacturers of solid rubber tires:

Tires guaranteed for 10,000 miles, to be run within 12 months from date of delivery, subject to the following conditions: That they carry no loads heavier than provided for in the list; that they be run on good public roads; that proper mileage records of the daily running of the tires be kept and inspection of such mileage records be granted if and when required; that a summary of the daily running of the tires be sent to factory every week; that due notice be given immediately upon a tire failing or being discarded before completing the 10,000 miles, and that such tire be sent to factory for inspection without delay. Subject to the foregoing conditions, the company undertakes to replace tires that fail to complete 10,000 miles, allowing pro rata for the difference the tires so replaced have failed to run. Unfair usage or accidents to the tires are not covered by the guaranty.

"The advertising methods employed by the tire manufacturers in Germany are not new. They depend largely upon catalogs and agents for marketing their product. Vehicle manufacturers and dealers are solicited for trade, but no special endeavor is made by extensive public advertising to popularize the makes described with the owners and prospective purchasers of motor cars and other vehicles. The American method of educating the public on the tire question and creating a demand for meritorious makes, irrespective of price, has worked so successfully in the United States that it might well be utilized by those who are about to introduce an American tire in Germany and who find the prevailing methods of advertising slow and unsatisfactory. The advertising question is of vital importance to American manufacturers who depend upon quality rather than price for the marketing of their tires.

French Tires in Germany

"A description of the selling methods employed in Germany by one of the leading French manufacturers of tires may be instructive to American manufacturers preparing to enter this market. The concern in question maintains in Germany a separate organization—formed as a stock company under German law—which imports from the French factory, but otherwise acts independently so far as selling is concerned, maintaining its own offices and stock rooms in Frankfort on the Main and having agencies and subagencies elsewhere. By having one or more receiving and shipping depots in Germany the company is in a position promptly to fill orders, inspect all the tires before delivery, repair or replace defective tires, and make exchanges and adjustments without the delay occasioned by the necessity of transacting such business direct with the home factory or export house in a foreign country. Having its own branch house and sub-branches in Germany, the company is also in a better position to select and keep in touch with its local agents, make judicious use of the best advertising mediums, determine the financial standing of customers, take prompt measures to prevent possible losses in cases where credit has been extended to firms which subsequently suffer reverses, and, above all, by personal contact with the trade, establishing those friendly and permanent connections which are the necessary basis, especially in Germany, for a profitable, growing business.

Establishment of Local Agencies

"After the establishment of a branch house with warehouse or stockrooms, and perhaps a repair shop, the next most important step in the formation of a domestic organization for the marketing of imported tires is the appointment of agents in the various localities where the prospects for business are favorable. It is difficult to select suitable agents by correspondence alone, which is the method pursued in Germany by many American manufacturers. If the business is here to be had on a profitable basis, it is certainly worth while to have a reliable representative visit the dealers in motor cars, bicycles and sundries for the purpose of making arrangements with one or more of them in each locality to carry samples or, preferably, a small stock of the tires. The dealer or agent's commission ranges from 10 to 15 per cent, which he usually obtains in the way of a discount on the list prices of tires ordered by him from the factory or import house.

"Whether the exclusive or nonexclusive agency plan is adopted, the American tire manufacturer must recognize the fact that this market is strongly competitive and must be vigorously exploited in order to achieve a fair measure of success. In seeking to introduce his tires in a particular district he must be willing to stock his agent with a supply of sample tires to be tried out, free of cost or at a low price, on machines of prospective buyers. Then if such tires after practical wearing tests compare favorably with tires already in use and the prices are right, large contracts can probably be secured from motor car and bicycle manufacturers and dealers who have a reputation to maintain and who wish the best values for money expended."

The Motorists' Bookman

German Art

"THE Art of the Munich Galleries," by Florence Jean Ansell and Frank Roy Fraprie, is a 450-paged volume on the history of the progress of the art of painting in the Old Pinakothek, the New Pinakothek and the Schack galleries in Munich. Albrecht V, who had a penchant for acquiring objects of value and magnificent furniture, is credited with the oldest collection, which was the formation of the Old Pinakothek, but it was due to Max Emmanuel's passion for picture collections that made this old gallery one of the greatest in Europe. The New Pinakothek, which stands opposite the Old Pinakothek, is characterized as a collection of pictures which "chance and fashion have brought together." The Schack gallery, which is the most important private gallery of German painting, was originally bequeathed by Count Adolf Friedrich von Schack to the German emperor, who hung the collection in his palace until 1909, when a new building was erected. The art lover and art student will find within the covers of this book a mass of valuable historical information on the old paintings which are hung in these three galleries. The book is well illustrated and is from the press of L. C. Page & Co., Boston. Price, $2 net.

Visiting Picture Galleries

The majority of tourists, while traveling abroad, has only a very limited time to devote to the study of the masterpieces in the great galleries of Europe, and for the benefit of such Esther Singletown has compiled a 500-page hand-book entitled "How to Visit the Great Picture Galleries." Out of several hundred pictures in each gallery the author has chosen the recognized gems, explains the significance of the scene represented, and from art critics of authority has selected passages descriptive of each picture. It is a practical guide and reference book. Some of the galleries chosen for this work are: The National gallery of London, the Louvre of Paris, the Hague, the Royal of Dresden, the Imperial of Vienna, the three galleries of Florence and the Prado of Madrid. Dodd, Mead & Co., New York.

Uncle Sam's Maps

The United States geological survey has issued a set of topographic atlas sheets or maps of the United States. The scales vary from 1 to 4 inches to the mile. The sheets are uniform in size, measuring 20 by 16½ inches. These maps are lithographed in three colors—the roads, railroads, cities, and towns in black, the water features in blue, and the hills and mountains in brown contour lines. The maps are very minute, showing the roads—good or bad—bridges, railroad crossings, state and county lines, etc. Accompanying these sheets are a set of index map circulars, which show in rectangles outlined in red the location and area of a quadrangle which has been topographically surveyed. About 2,000 of the atlas sheets have been published, and sell at 5 cents per sheet. If ordered in lots of 100 these atlas sheets can be purchased at the rate of $3 per hundred. Published by the United States Geological Survey, Washington, D. C.

Country and Suburban Garages

Of timely interest is the book just published by the American Architect, New York, entitled "Garages—Country and Suburban." This 9 by 12 volume contains over eighty illustrations of recently built garages throughout the east and middle west. Accompanying each exterior view of a garage is a floor plan and architect's working drawings. Included in this book of plans are articles on garage equipment; the subject of gasoline and oil storage is also discussed, with illustrations on the underground method of storage. Price, $4.

From the

BURMAN Going Abroad—It has been practically settled that Bob Burman will cross the Atlantic with the idea of racing at Brooklands on May 30. After that he may barnstorm England.

May Race in France—W. J. Morgan, representing the French grand prix, announces the chances are good for the National, Marmon and Buick taking part in the foreign race. The date has been changed from July 2 to July 9 because of the abandonment of the Mount Cenis hill-climb.

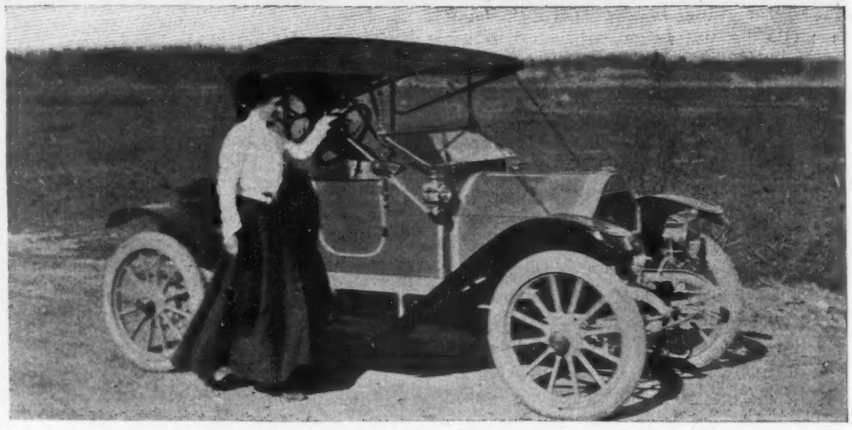
Horses Included—All horse-drawn vehicles in the District of Columbia are now compelled to carry lights and a license tag. The new regulation requiring tags has just gone into effect and is very pleasing to the motorists. The tags cost 50 cents each and are issued by the secretary of the motor car board.

Touring Club Opens Branch—The first branch office of the Touring Club of America has been established in the national capital. Rooms have been secured in the Colorado building at Washington, D. C., and they were formally opened Saturday, in charge of LeRoy Mark as manager of the branch.

Prize for Most Members—The Automobile Club of Syracuse, of Syracuse, N. Y., announces that it will soon inaugurate a membership campaign with a $100 tire for a prize for the member getting the most members before January 1 next. It is stated that a prominent tire manufacturer has donated a tire to the club and wants to see the membership raised to 1,000 before the start of another year.

Garages on Steamers—The Goodrich Transportation Co., operating steamers out of Milwaukee and Chicago to great lakes points, has made provision for motorists during the coming summer. Each liner has a garage in the hold. When the motorist brings his car to the dock, the gasoline is removed from the car and he is given a credit slip. The gasoline is returned at the point of destination. Each of the company's docks will be rigged to take care of cars and transfer them into the boats. The plan is for the convenience of motorists who wish to go some distance and still have the use of their cars, yet who do not wish to drive a long distance.

Oklahoma Is Ambitious—At the meeting of the board of control of the Oklahoma Automobile Association, temporary plans were made for the annual Daily Oklahoman endurance run to be held in June. The pathfinding party will leave Oklahoma City about June 1 and the run will take place about the middle of the month. Several objective points were considered, Denver being favored, but the final selection will not be made until the next meeting. The tentative route outlined, and which is likely to be adopted, leads through Kiowa, Dodge City, Syracuse and Garden City, Kan.; La Junta, Pueblo, Colorado Springs and Palmer Lake, terminating at the Colorado capital. The round trip comprises 1,534 miles and will be the longest run yet undertaken by Oklahoma motorists. The pathfinding car will be the Hudson and will be driven by J. L. McClelland.



As an example of the flexibility of the engine, the Great Western Automobile Co. offers the above. The car is running on high speed but so slowly it is possible for the young woman to walk alongside and steer it

Traffic in Piccadilly—On Friday, March 24, from 12 o'clock mid-day until 6 o'clock in the evening, Harry Hewitt Griffin, the chief organizer for city day census, took a census of traffic passing along Piccadilly both east and west at a point 50 yards away from Piccadilly Circus. The result is somewhat interesting, as it shows the total number of vehicles as 3,514, 89.61 percentage being motor vehicles, and only 10.39 drawn by animal power.

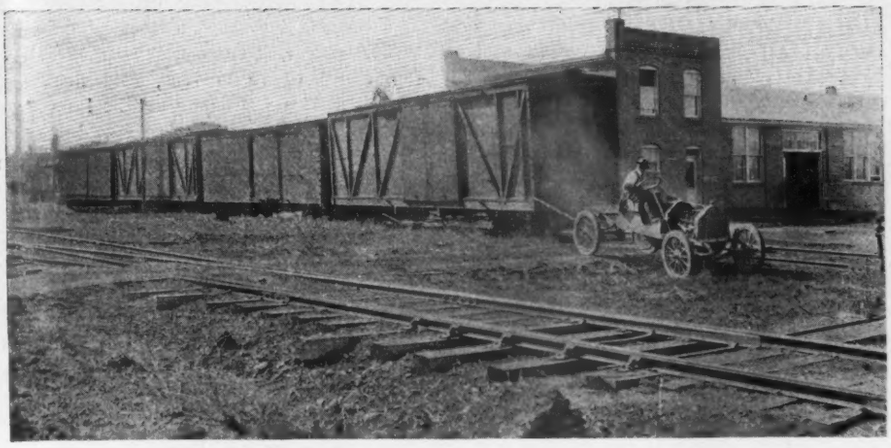
Club Merger Proposed—Consolidation of the two clubs in Houston, Tex., to be affiliated with the American Automobile Association, has been proposed and the merging of the two organizations will take place by June 1. The older of the two organizations is only a local body, except with connection with the Texas Automobile Association. The newer body, organized last winter with John S. Bonner president, immediately affiliated with the A. A. A., and it was under sanction of this club that the recently successful Bering cup run was staged.

St. Louis Gets Busy on Roads—As a result of the recent good roads agitation by the state immigration commission and the St. Louis Times, a motor highway is to be opened the first of June between St. Louis and Arcadia, Mo., a distance of about 100 miles. The Times sent an Overland pathfinder car, in charge of a representative of the immigration commission along the route, and succeeded in arousing enough good roads sentiment to procure the building of the highway now under construction. In connection with the formal opening of the highway June 1, a 2-day endruance run is being planned, by way of De Soto, Bonne Terre, Flat River and Ironton. Several other routes for motor car highways were laid out at about the same time, one of them being from St. Louis to Springfield, and another from St. Louis across the state to Kansas City.

Germany Counts Tourists—According to the latest government statistics 14,287 foreign motor cars toured Germany between October 1, 1909, and September 30, 1910. During the similar time 1908-1909 there were recorded only 11,910 foreign cars, while in 1907-1908 the number was 7,282, and in 1906-1907 only 5,254. The United States shows up well, for 810 cars made in the states were in Germany. This may not seem so much compared with the 5,154 which came from France, the 2,780 which came from Austria, the 2,063 from Switzerland, the 1,818 which came from Belgium, and the 1,096 which came from Holland.

Portland Club Aroused—The Portland Automobile Club of Portland, Ore., has been inoculated with the spirit of energy. Reorganized, revived and with ambitious plans outlined, and with every prospect of their consummation, the organization promises to take the lead among coast clubs. For some time the Portland club has been in the hands of officers whose ability and ambition could not be doubted, but whose business affairs so occupied their attention that they were unable to give to the club the time it required. Recently they have laid down the guiding reins and they have been taken up by men willing to give the time and labor necessary to make the club a factor in Oregon progress. The center of the campaign which has been laid out by the new directors is a club house. The subject has been broached for years, but nothing definite was done toward a home. Carrying out the idea to build and maintain a $50,000 home, preferably at some point along the Willamette river above Portland, a splendid enthu-

Four Winds



The Great Western Automobile Co., of Peru, Ind., needed freight cars the other day, so a test car was hitched to four empties and pulled off the side switch to the company's loading platform

siasm has developed among the members. W. J. Clemens is the new president of the club, T. Irving Potter, secretary, and George K. Clark, Oliver K. Jeffery, Harry L. Keats, John S. Beall, Frank C. Riggs and Robert D. Inman, directors.

Encouraging the Farmers—The Business Men's Association of Fond du Lac, Wis., has turned over thirteen split-log drags to the road superintendents of the various townships in Fond du Lac county. The association means to have every road leading into the city improved. In conjunction with business men at Oshkosh, Wis., the association is improving the main traveled road between the two cities around the west shore of Lake Winnebago.

Real Reciprocity — Owners of Ohio, through the Cincinnati Automobile Club, have secured from Secretary of State Benjamin Brunner of Kentucky a ruling to the effect that cars having the Ohio license and required number plates will not be molested while crossing the state line into Kentucky. By this ruling complete reciprocity has been obtained for owners between the two states. Considerable complaint was made because of arrests of Ohio owners by the authorities of Dayton, Ky.

Racing Club in Portland—Portland, Ore., is to have one of the biggest sport-fostering clubs in the world. It is known as the Country Club Racing and Exhibition Association, which was incorporated during the past month by ten prominent Portland men. Besides the building, the property will include a motordrome. The new organization is capitalized at $100,000. The institution is to be built at Rose Vista farm, where is located the 12-Mile house, 2 miles from Gresham on the Base Line road. By pushing the project it is expected to have the work completed in time for the summer racing, and, anyway, in time for fall events. The tract is a beautiful one of 90 acres. It lies in a picturesque region easy to reach from Portland. It already is equipped with a ½-mile track, and it is planned to encircle this with a motordrome and an aerodrome.

Firemen After Motorists—The police department of Columbus, O., has issued strict orders to prevent motor cars left standing near fire plugs and hydrants, to the danger of preventing the fire department from making proper hose connections. In pursuance of the orders several motorists were arrested recently for standing their cars near the Colonial theater.

Racing for the Badgers—The Kenosha Motordrome Co. has been incorporated at Kenosha, Wis., with a capital of $10,000. The incorporators are M. A. Kent, C. B. Kent and C. H. Wells. The corporation will take charge of the new race track project of the Kent Brothers, who have leased the Bain horse track at Kenosha and will rebuild it for motor racing purposes. It is a 1-mile track which was for many years considered a model horse track, and with the improvements now under way should be one of the finest mile dirt speedways in the country.

Marylanders Signboarding — Road-sign posting is the chief work now being conducted under the auspices of the Automobile Club of Maryland. The work this week was begun on Charles street above week was begun on Charles avenue above the city limits. The party continued to Towson and then to Joppa Road, to Glenarm, to Belair, Churchville, Havre de Grace, Perryville to Elkton to Glascoe to Newark, on the Delaware line. The return to Baltimore was via Fair Hill, Rising Sun, Conowingo, Kalmia, Belair and back to Baltimore. These points are in Baltimore, Harford and Cecil counties. The return route is the one that eventually will be established between Baltimore and Philadelphia, as the state road commission has done a lot of work along the route. The cut-off between Kalmia and Castleton soon will be completed. Roads will be posted this week between Baltimore and Annapolis.

Caley Goes to Cleveland—Fred H. Caley, general manager of the Automobile Club of Cincinnati and until the first of the year registrar of motor cars in the office of the secretary of the state of Ohio, has accepted the secretaryship of the Cleveland Automobile Club.

Ferry Now Running—The ferry across Cayuga lake from the village of Cayuga, N. Y., is in operation. Heretofore motorists traveling between Syracuse and Rochester found the road north of the lake almost impassable owing to extensive repairs upon it now just under way.

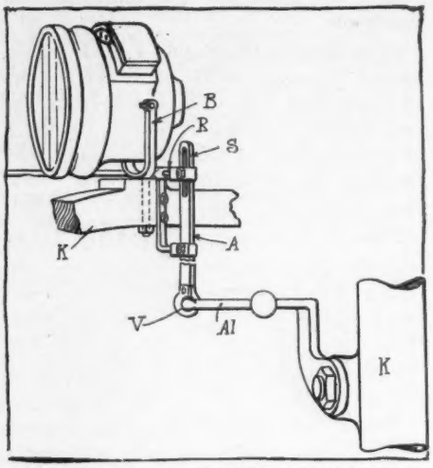
Money for Signboards — The Chicago Motor Club, which already has spent $3,000 for signboards, has appropriated an additional $1,000, which is to be spent on marking new routes during the month of May. It is planned to appropriate a second $1,000 June 1 for the use of Chairman Charles M. Hayes' committee.

Boston Chooses Orphans' Day Date—Chester I. Campbell has picked out Wednesday, June 7, as the day on which he will hold the annual run for blind and crippled children to Sharon this year. He is working out the plans now and has started to secure a lot of cars for that day. Last year nearly 2,000 youngsters were taken out.

Bay State Picks Dates—The Bay State A. A. outing this year will take place June 17, 18 and 19, and the Hotel Seppiwissett, located on Buzzard's bay, has been picked out as the spot. The plans call for a run to the hotel June 17, which is a holiday in the Bay State. That afternoon there is to be a clam bake, followed by a ball game between a Bay State team and some other association. In the evening there will be a vaudeville entertainment, followed by dancing. Sunday will be spent motoring about the cape or sailing and boating. It will be optional as to when to return, either Sunday or Monday morning.

Nine Directors Chosen—The McLean County Automobile Club, of Bloomington, Ill., completed its executive force at a special meeting this week, when nine directors were chosen, as follows: W. K. Bracken, J. A. Beck, Charles Brokaw, George Freese, A. W. Rigby and F. A. Dewenter, all of Bloomington; Frank Skaggs, Danvers; W. O. Tuttle, McLean, and Louis J. Schultz, Chenoa. The contest committee was instructed to arrange the details of the annual reliability run for the Velde silver cup. It was decided to hold the contest the last week of May. Steps are being taken to prosecute persons who make a practice of throwing broken glass in the roadways, and also persons who were guilty of driving nails through boards and placing the boards with nail points up in the rural roads.

Current Motor Car Patents



MAXWELL'S SWINGING HEADLIGHT

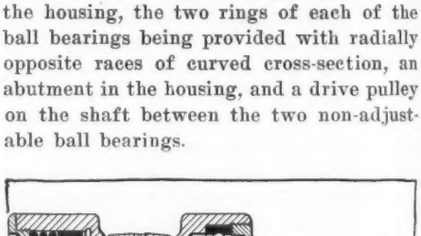
SWINGING HEADLIGHT—No. 989,457; dated April 11; to H. W. Maxwell, New Mexico—The lamp is mounted on a bracket B direct on the spring K of the chassis. The bracket has short rod R extending rearwardly which engages by pin with a vertical slot in the arm A, this arm being carried on the spring also. Connection is had with the steering knuckle K through the horizontal arm A1, provided with a universal joint where it connects with the vertical arm A. The slot in the top of the arm A is to permit of the up-and-down spring action, which A, being carried directly on the steering knuckle, has not.

Pawl and Friction Absorber—No. 989,407; dated April 11; to L. A. Peckham, Edgewood, N. J.—This shock absorber consists of a drum connected to the wheel spring and a friction band surrounding the drum and connected with the car frame. The drum is mounted loosely on a stud and is allowed to freely rotate in one direction but cannot rotate in the opposite direction because of a ratchet wheel mounted rigidly on the stud carrying the drum, whereas the pawl is mounted on the drum. This arrangement allows of the shock absorber restricting spring action in one direction only. The claims include: A fixed stud S, a ratchet wheel W supported by said stud, means for preventing rotation of said wheel on the stud, a friction drum independently and rotatably supported by said stud, an annular space being formed between the ratchet and inner wall of the drum, a pawl D in said space and supported by the drum and engaging the ratchet, a cover mounted on said stud and having its margin fitting the drum whereby the annular space between the ratchet and the inner wall of the drum will be protected against access of dirt, a friction band B surrounding said drum, and connections C for causing the friction band to oscillate, whereby the friction drum will be intermittently rotated.

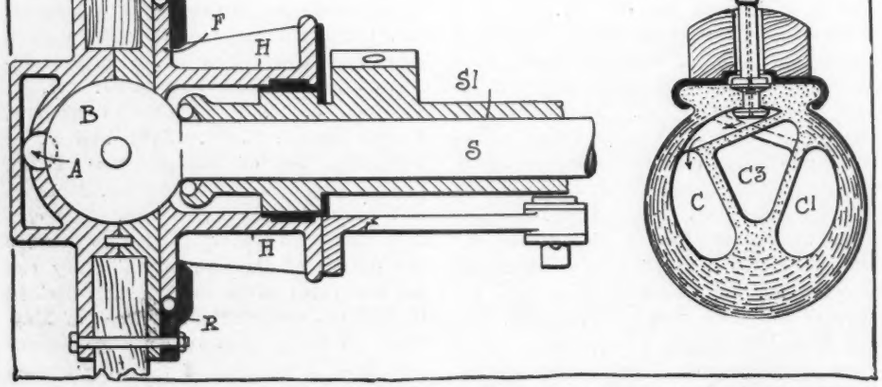
Multi-Cell Pneumatic Tire—No. 989,431; dated April 11; to A. T. Scaramuzzi, Paterson, N. J.—The tire has two cells C and C1 extending circumferentially and a third cell C3 arranged between them; in combination are three separate inflating means for the three cells all arranged in the center vertical plane of the tire. One of the inflating means discharges into tube C3 and the tire having two walls forming each with the outer wall a passage, one of said passages connecting cells C with an inflating means and the other passage connecting cell C1 with the other inflating means.

Front Wheel Drive—No. 989,501; dated April 11; to E. A. Gotterba, Bisbee, Ariz.—This patent relates to driving and steering a motor car through the front wheels. It includes a driven shaft S, having a spherical terminal B, a road wheel W with a two-part hub forming a socket to contain the ball B, a ball key A seated on the shaft terminal and engaged in a longitudinal groove in the hub, said groove extending in a plane passing through the axis of the wheel and shaft, a steering and guiding headpiece H connected with the steering wheel of the driver, said headpiece having a flange F engaging the inner face of the hub, a retaining ring R bolted to the wheel hub with ball bearings between it and the flange F, a sleeve S1 on the shaft S and provided on the top and bottom surfaces with flat surfaces fitting the top and bottom walls of the guide head H, said sleeve having at its outer end a ball race with balls traveling on the shaft S at the junction with the ball B and means carried by the sleeve S1 for closing the opening in the steering and guide head H.

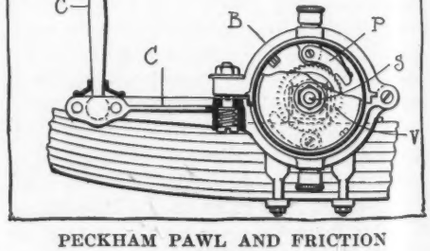
Ball Bearing Mounting—No. 989,256; dated April 11; to Henry Hess, Philadelphia, Pa.—The claim in this patent relative to mounting a shaft on non-adjustable ball bearings includes a housing, a non-adjustable ball bearing comprising an inner bearing ring fast on the shaft and an outer bearing ring fast in the housing, a second non-adjustable ball bearing comprising an inner bearing ring fast on the shaft and an outer bearing ring loose in the housing, the two rings of each of the ball bearings being provided with radially opposite races of curved cross-section, an abutment in the housing, and a drive pulley on the shaft between the two non-adjustable ball bearings.



HESS BALL BEARING MOUNTING



GOTTERBA'S FRONT-WHEEL DRIVE AND SCARAMUZZI'S MULTI-CELL TIRE



PECKHAM PAWL AND FRICTION ABSORBER

The Motor Car Repair Shop

This is a type of motor stand that the Packard company supplies to its dealers and branches. It is made of cast iron and is so designed that the part to which the motor is secured resembles a cradle which may be rocked into positions that will enable the workmen to operate conveniently upon either the under or uppermost portions or sides

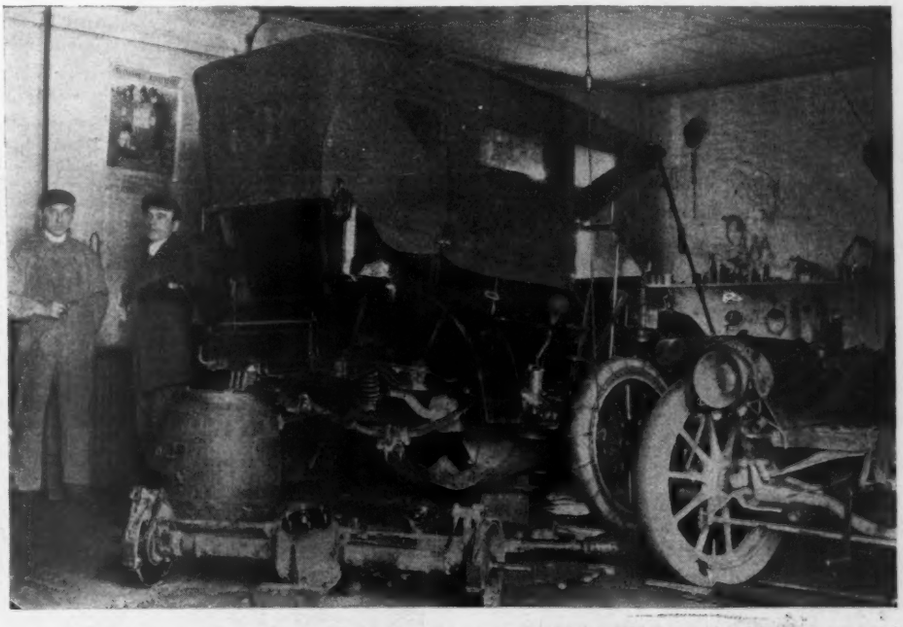
IT might safely be said that the greater the variety of cars worked upon in a motor car repair shop, the greater the variety of special tools and general shop equipment necessary to turn out good work in a reasonable length of time. There is, however, another important factor which is essential to the repair shop that would be known for its efficiency, and that is a foreman with the necessary qualifications. In fact, the foreman of the repair shop is the most important factor, for it is he who wields the most influence regarding the choice and installation of shop equipment; it is his mechanical ingenuity or lack thereof that is felt when mechanical difficulties which frequently arise must be met; it is his scrupulousness that governs the class of work performed in the shop. As the shop is known by the work it turns out, the most important factor in the modern motor car repair shop is its foreman; the second factor in importance is its equipment, and if both these are of the best the workmen and the work that they perform also will be of the best; it follows as the night does the day.

Avoid Cheap Labor

The trouble with most repair shops is that in the first place cheap labor is employed; secondly, the facilities for doing good work are very limited; and, in the third place, there is no cost system. It takes an unskilled workman much longer to do a job poorly than it does a skilled one to do it well. A good workman can get along much better with poor equipment, if he will, than a poor workman. A poor workman often does much damage while attempting to repair a car, and, being a poor workman, is unable to rectify the damage properly. It generally takes a poor workman longer to do a job wrong than a good one to do it right; and a thing done right the first time needs no undoing and rectification. An intelligent workman can get along without things where an ignorant one would be perfectly helpless; but the intelligent one would not be long without the things that he needs, whereas the ignorant one would not have sense enough to get or make them. A poor workman generally is a cheap one and easily found; but the demand for good men is so great that they can not be gotten except at a good salary. In every motor car repair shop there should be at least one good workman, and a $30-a-week man can turn out more work that will be a credit to everyone concerned than two, and perhaps three, $15 men.

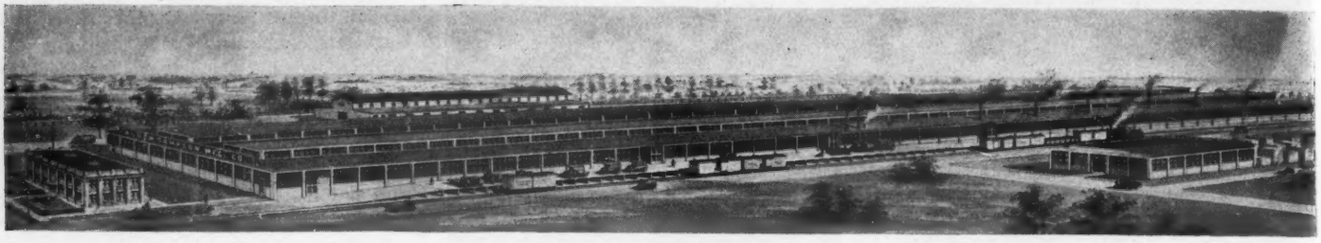
Equipment of Shops

As for the equipment required in the motor car repair shop, a lathe, a drill-press, an arbor press, an emery wheel grinder and a forge are quite necessary unless a machine shop is conveniently located in the neighborhood. A shaper, too, and a valve-grinding machine are very useful with some motor car constructions. In addition to the machine tools, a compressed air outfit is most desirable, as is also a portable electric or compressed air drill. Soldering and brazing equipment is quite essential; and facilities for repairing tires and charging batteries are to be found in many shops. Special tools, such as wheel and gear-pullers and jigs or instruments for testing sizes and alignment of parts, also are required; and though there are many shops that may boast of their ability to get along very well without these, there is no doubt that better and faster work could be done with them. Last, but not least, suitable racks should be provided on which to set motors, gearsets and rear axles while they are being repaired or adjusted.



This illustration shows how an oil barrel may be conveniently used for the purpose of supporting the rear end of a car which has three-quarter platform rear spring suspension; it is claimed to be most substantial and greatly facilitates the removal of the rear axle

In the Realm of the Commercial Car



COMPLETE PLANT AT DETROIT, WHERE ALDEN SAMPSON TRUCKS ARE MADE

Omaha's Giant Truck

THE Omaska Tractor Mfg. and Foundry Co., of Omaha, Neb., has built and is using for demonstrating purposes what is claimed to be the largest and most powerful gas-electric motor truck in the world. The weight of this giant truck is 8 tons without load. The rear wheels are 60 by 4 and the front wheels 36 by 4. The truck is equipped with the Hartford brand of United States solid tires, those on the rear wheels being the dual-side flange type.

Some demonstrations of the capabilities of this powerful vehicle have been made on the streets of Omaha. One demonstration consisted of a local trade excursion of the Commercial Club of Omaha through the wholesale district. Six dump wagons weighing 1 ton each were attached to the truck, forming a complete train. With the carrying capacity of the truck and these wagons 126 men were able to get aboard. The weight of this load, counting the weight of the truck, was 25 tons, and, taking into consideration the drag pull, the actual tonnage handled on this occasion was practically 42 tons. On one stretch it was necessary to climb a 7 per cent grade. In addition the train was stopped on the side hill, with all six wagons and the truck on the hill, and a new start made from a dead stop with full load without any difficulty, and only three-quarters of the power was used.

On another occasion it was necessary to go into the Burlington freight yards after a 10-ton pump purchased by the Omaha city government. The pump was on a flat car with another weighing 2½ tons. The car had not been properly spotted so that the pump could be unloaded. The truck was chained to the flat car and with its own power moved the car with its 12½ tons load to a more convenient point. Following that, the 10-ton pump was loaded onto the truck and with an additional flywheel, weighing 2,500 pounds, and a block and tackle, planks and human freight, which made the load in all about 13 tons, this 8-ton truck moved to the city hall.

MOTOR PLOW FOR FARM WORK

A motor plow which it is claimed is destined to revolutionize farm work has been invented by Alexander T. Brown, of Syracuse, N. Y. The initial trials were held last week at the Harrison farm, Cortland, N. Y. One trip of the motor plow the length of the field and back demonstrated its ability to plow .9 acre of ground in 1 hour, and it is claimed this efficiency will be increased ere the machines are placed upon the market.

Mr. Brown and C. C. Greenfield have been working on the machine for a year, and the latter superintended its construction. E. E. Harrison, an expert machinist, also assisted, and with Mr. Greenfield, operated the plow last week. This motor plow is 15 feet in length, weighs between 6,000 and 6,500 pounds, carries a 20-horsepower four-cycle two-cylinder opposed motor, and cuts two 14-inch furrows. Among the ingenious features of the machine is mechanism which eliminates the necessity of steering it while in operation, or of making any turns in the plowing of a field. It is equipped with four plow bottoms, two at each end, and in operating works backward and forward across the field, shuttle-wise, in this manner:

The motor plow is run the length of the field with the two blades at the right of the operator cutting two furrows. Then the engine is reversed and the bottoms at the right are lifted while those at the left hand are lowered. The large wheel which has been rolling in advance swings across the end and sets the machine over the distance necessary for the next two furrows, and then back to its original position.

GIANT WHEEL USED ON THE OMASKA 8-TON TRUCK

The clutch is thrown in, and in going back, the wheel which was in the rear of the working bottoms while operating in the opposite direction, is now in advance and follows the furrow which has been already cut. The wheel will not leave the furrow and steers the machine along the line laid down by the first furrow cut. The mechanism of the third wheel, which is directly back of the operator, is so constructed that the center of gravity is maintained and the machine balanced to meet the requirements either of rolling or level ground.

Mr. Brown says that this motor plow is designed to meet the needs of the ordinary farmer and not for the western prairie lands, where they use a gang plow of twelve or fourteen blades, cutting furrows a mile in length. It is stated that this plow will be marketed at a price which will not be beyond the means of the average farmer, while in sections where the farm land is held in sections of small acreage it is probable that one man in the district, owning one of the plows, will do the work of all, charging by the acre.

When the machine is fully equipped it will have a canopy, allowing it to be operated in wet weather, and lights, so that it may be run nights if necessary.

ENTERS TRUCK INDUSTRY

The Racine-Sattley Co., of Racine, Wis., manufacturing carriages and wagons, brought out a motor truck of its own design and manufacture last week. The plant has been experimenting with trucks for some time. The motor was built by the Halbrook-Armstrong Iron Co., manufacturing motors, engines and iron work at Racine. The first truck will be used for exhibition and advertising purposes and will be sent through Illinois and Wisconsin with Racine-Sattley products.

BOSTON CHOOSES OFFICERS

The Boston Commercial Vehicle Dealers' Association, which was formed early in the year with temporary officers, now has started on its way with a regular complement of officials elected for a year. At

Operating Field of the Heavy Truck

By J. T. LANGHORNE,
Manager Truck Department, Packard Motor Car Co. of Detroit

HEAVY trucks are useful in the short haul field mainly to supplement the work of lighter vehicles. A notable illustration of this method is found in the delivery service of Marshall Field & Co. This concern employs fourteen 3-ton trucks of the Packard type and maintains a well-equipped garage to keep them at the highest point of efficiency for delivery purposes.

These trucks carry heavy loads from the big store to distributing stations, from which points they are delivered in light wagons. A continuous haul at 12 miles an hour means from two to four times the work it is possible to accomplish with horses. The hauling to outlying delivery stations works in naturally with the plan of carrying heavy loads to suburban points. The necessity of keeping the trucks moving in order to obtain the greatest economy in operation has developed some excellent equipment in the line of removable bodies.

Kaufmann Brothers, of Pittsburg, have six trucks which are equipped with nests or cribs. These large removable bodies are loaded in the warehouse and the operation of rolling them into place on the trucks requires but a few minutes.

A similar plan is followed by John Wanamaker in New York. He keeps a battery of Packards on the move practically 24 hours each day, working the drivers in relays.

Different types of removable bodies are employed to make the truck effective for short hauls in the lumber business. The Curtis & Pope Lumber Co., of Boston, has a truck body equipped with rollers, over which the false body slides into position from one side. The Willson & Adams Co., of Mt. Vernon, N. Y., has developed another type, the removable body sliding on from the rear. The use of dumping bodies is another factor in getting best results.

John Schaffner, of Butler, Pa., is using a truck to carry brick for new state roads in Pennsylvania. It is loaded from a chute in 2 minutes and dumped in 3 minutes by releasing a clutch. This truck replaced five teams of horses. A somewhat similar design is used by the R. T. Ford Co., contractor at Rochester, N. Y., now employed on a big building contract in Albany.

Jagels & Bellis, of Hoboken, and the F. H. & A. H. Chappell Co., of New London, Conn., are among the coal concerns which have developed effective types of bodies for retail delivery service. In each case the coal is loaded and unloaded by means of a chute. It takes the Jagels & Bellis truck 3 minutes to load. To unload, including the raising and lowering of the body, requires 11 minutes. The adaptability of the truck to almost any form of body design is one of its strong features in the short-haul field.

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its meeting a few days ago C. F. Whitney, who has the Stoddard-Dayton and Alco and has been acting president, was chosen president for the full term, with Alvan T. Fuller, the Packard agent, vice-president; Day Baker, of the General Vehicle, treasurer, and Chester I. Campbell, secretary. The directors chosen are C. F. Whitney, J. H. MacAlman, A. B. Henly, L. B. Butler, A. P. Underhill, J. S. Hathaway, J. W. Maguire, Alvan T. Fuller and Day Baker. The members discussed a number of topics, such as shows, runs and demonstrations, and committees were chosen to look after them and report later.

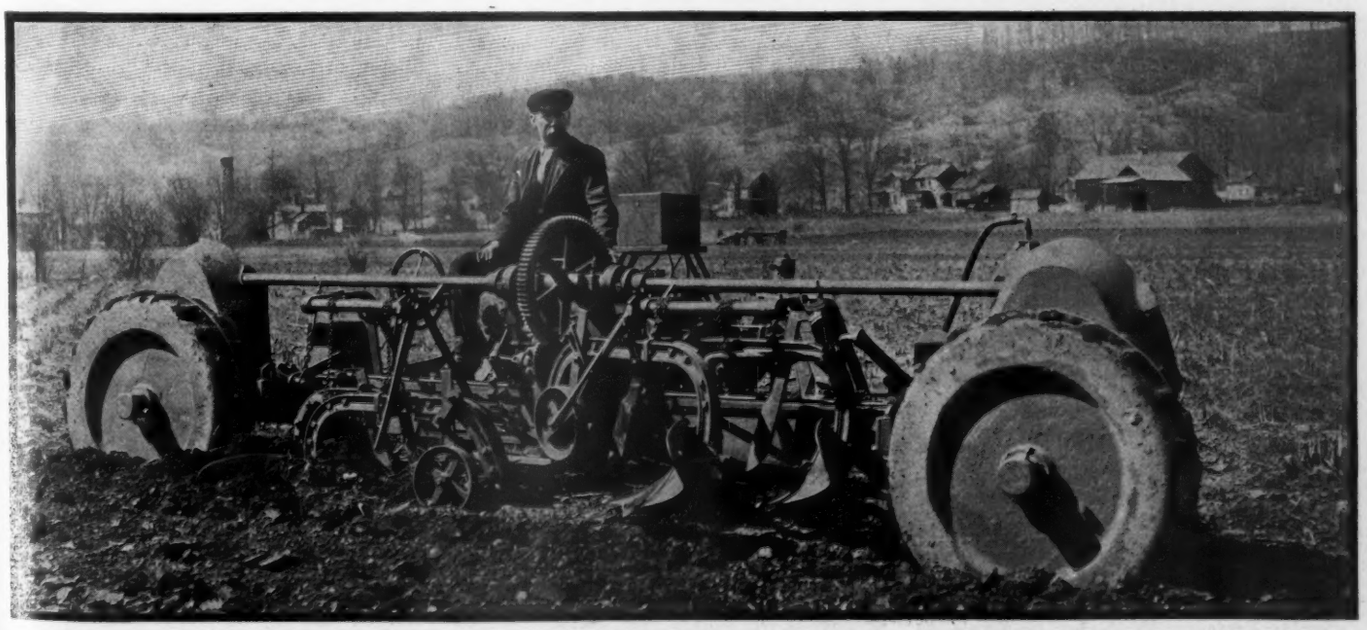
The general opinion seemed to be favorable for a run of some sort next June, and there is little doubt but what there will be a report made in favor of a separate show for trucks next year.

TRUCK NEAR JOURNEY'S END

The Saurer 5-ton truck, covering the southern transcontinental highway, arrived in Phoenix, Ariz., April, after a record-breaking run from Globe of 112 miles in 1 day. Now it is en route to Los Angeles, where it is expected to arrive Saturday. On the run through Arizona, the air brake, a feature on the Saurer truck, had an opportunity to demonstrate its efficiency as speed-retarder, gasoline-saver, engine-cooler and preventer of tire sliding. The route was via Roosevelt dam and through Fish Creek canyon, fast becoming famous for its magnificent scenery.

From Phoenix the truck will proceed to Los Angeles via the Phoenix race route, crossing the Colorado river by ferry into California at Ehrenburg, then across the desert past the north end of the Salton sea, 200 feet below sea level, and cross Beaumont pass into the orange country of San Bernardino and Riverside, where a magnificent oiled boulevard will carry them to Los Angeles, where they will arrive about Saturday.

While in Phoenix Pilot Westgard had a conference with Governor Sloan.



MOTOR PLOW INVENTED AND DEMONSTRATED BY ALEXANDER T. BROWN, OF SYRACUSE, N. Y.

Lubrication of Ball Bearings

By Victor W. Page, M. E.

THE conditions under which a ball bearing of the annular type operates are radically different from those which obtain in plain journals, and the superior efficiency of the bearings in which balls are utilized to support the load is due to a point contact instead of utilizing the greater areas which obtain on brasses which partly or completely encircle the shaft and which have a correspondingly augmented friction.

The requirements call for extreme accuracy of manufacture and the successful ball bearings are machined to the very close limits of .0001 of an inch. This micrometrical unit means but little to the average layman and there is no very general conception of the care necessary to work to the close limits established, or of the highly developed state of the machine tools used and the practical perfection of the measuring appliances employed. When one considers that this extremely small part of an inch is about one-twentieth the thickness of an average human hair, the difficulties that beset those who are endeavoring to work to this close limit and turn out large quantities of work in a commercial manner can be better appreciated.

Outsiders Prone to Criticise

Despite the extreme care taken in manufacture, bearings of the leading makes sometimes fail in service, and the motorist or average dealer, ever ready to condemn that which he does not fully understand, attributes the cause of failure to careless workmanship or the use of poor materials on the part of the producer, whereas the trouble is often due to conditions which are entirely within the motorist's control. A ball bearing must have a certain amount of running clearance, but in the leading types this is much less than in a plain bearing, it being common practice to allow a radial freedom never greater than .001 inch. In connection with this, in single row radial bearings an axial freedom or end play of the inner race relative to the outer is allowed, this varying with the size of the bearing between the extremes of .0005 to .005 for new ones. Thus a properly made and installed ball bearing will not deteriorate in the accepted sense of the term as applied to plain boxes, that is, there will be no reduction of diameter or increase in bore. If there is an excessive amount of axial or radial motion, it has been caused by the admittance of some abrasive between the components of the bearing.

Origin of Some Trouble

As is true of any abrasive, the amount of wear will depend upon the cutting power of the grit, the pressure the bearings are subjected to and the amount of time the foreign matter is between the working surfaces. Motorists as a rule do not make a practice of running their bearings in an abrasive, but there are many places where these are installed where a certain amount of dirt and metallic particles are always present. The writer has had opportunity to investigate many cases of ball-bearing failure and in the majority of cases the untimely deterioration has been found to nave been due either to overloading or to presence of impurities in the lubricant.

For example, many cases of trouble in rear axle and transmission case bearings have been definitely ascribed to the presence of minute particles of metal ground off from the gears or sand loosened from the interior of the gearcase or rear axle housing castings. In sliding gears, especially when operated by an inexperienced person, there is a constant clashing of the pinions in changing speed, which tends to loosen particles of metal from the teeth. These fall into the lubricant and are churned around and ofttimes find their way in the ball races. The rapid failure of the bearings is the inevitable consequence.

Carbon a Trouble-Maker

It is the writer's opinion that many cases of ball-bearing failure in motor car engines, when used to support the crankshafts, have been due to the presence of particles of carbon and other foreign matter in the oil rather than any structural defect or inability to resist the stresses which obtained. The importance of proper mounting has been so firmly impressed upon the car manufacturers that but little difficulty obtains in cars of reputable makers from improper installation, so we are forced to look elsewhere for our troubles.

There is a condition, however, that is beyond the control of the manufacturers of either the bearings or the mechanism to which they are fitted, and that is the use of impure oils and carelessness in washing the car. Many cases of failure of wheel bearings have been directly attributed to rust caused by the indiscriminate application of a stream of water at 40 or 50 pounds per square inch pressure, which is not uncommon in many city water mains, to the parts of the car in which they are mounted.

The water finds its way into the bearings, causes the highly finished surfaces of the balls and races to rust, and the extreme accuracy in manufacturing and the care in installing is fruitless in preventing rapid breaking down of the bearings. The motorist will not deliberately clean off the parts of the power plant with a hose, the evil effects of water at this essential point have been brought to his attention too forcibly by troubles in carburetion and ignition, yet the same person who is so extremely careful of the motor will spray other parts fully as important in the duties they perform, with a stream of water under high pressure.

Water Rusts Bearings

That rust is absolutely destructive to ball bearings has been thoroughly proven in so many instances that the contention cannot be questioned. Of what value is extreme accuracy of finish of the balls to .0001 of an inch if the advantages accruing are to be mitigated by deposits of rust of much greater thickness than the limit established in manufacturing? Such a condition can be as easily recognized by the novice as by the most expert, for even if the bearing has been cleansed so that no ferric-oxide is visible to the eye, there will be a number of pits or depressions on the various parts of the bearings, especially at the highly finished ball surfaces, which are clearly evident. While these minute irregularities are sometimes caused by overloading and the flaking off of the metal which results from this condition, if due to causes other than rust and acid they would be confined to the ball tracks, whereas excoriations resulting from chemical action will be in evidence on all parts of the bearings.

It is a known fact that many oils and greases contain acids or alkalis either as a necessary component of their chemical composition, as in some animal fats that contain stearic acid; as a part of some filler used to adulterate the oil or alter its viscosity and sometimes as a residue of some of the processes of purifying that obtain in refining from the crude product. The presence of acid in lubricants will cause an etching with irregular edges in contrast to the clearly defined rust marks.

A very ingenious theory has been advanced by a European engineer that ascribes the deterioration of the surfaces to an electrical action which is a direct result of the chemical effect, such as obtains in a galvanic battery. The principle of this action is that two dissimilar metals in an electrolyte capable of attacking the surface of one more than the other will produce currents of electricity, the production of electrical energy being accompanied by a chemical action which is stronger than would obtain if but one of the elements were immersed in the electrolyte. As any acid or alkali will act as an electrolytic fluid, a bearing which in-

Wise Words on Care of Ball Bearings

cludes a separator of any other material than steel may act as a battery of many minute cells, the intensity of the minute currents generated and the resulting chemical action depending upon the amount of alkali or acid in the oil and the numbers of points of contact between the dissimilar metals of the bearings and the separator.

Electrolytic Action Disregarded

It is the writer's opinion that this electrolytic action can be largely disregarded, because the chemical action alone will be sufficient to etch the surfaces, and we need concern ourselves more with something of which we have definite knowledge than a mere theory, no matter how plausible or interesting it is. The question of the effect of acid and rust on ball bearings has been discussed before in the columns of the technical press, but even at this time many motorists do not realize the importance of using absolutely pure ingredients for lubrication purposes.

It is very difficult for one who is not familiar with chemistry to determine if an oil or grease contains deleterious substances, and there also is considerable difference of opinion among authorities as to what constitutes a good lubricant for ball bearings. These will vary in viscosity from light spindle oils to heavy greases, depending upon the nature of the bearing, the speed it runs at and the nature of the work it is called upon to do. As a general rule, too heavy greases are to be avoided, as these often contain vegetable or animal fillers, and even if pure mineral products, they will not fill the interstices between the balls and the separators as will lighter oils that flow more readily.

Care of Bearings Necessary

High speeds demand lubricants of lesser viscosity, low speeds and heavy loads require greases as heavy as possible to feed to the bearings positively. There has been a general misconception on the part of many motorists, this having been encouraged by dealers and others who should know better, that bearings of the antifriction type, including all types of annular ball and roller forms, need very little lubrication and demand no attention after once being installed. While bearings in this classification demand less attention than plain journals, it will be evident upon careful consideration that they should be examined from time to time to ascertain that they are clean and that the lubricant employed is free from impurities.

As an aid to non-technical motorists, the writer will detail some simple tests that can be used to determine the suitability of the lubricant to any type of bearings where accuracy and absolute truth of the surfaces is an important factor in securing efficiency and endurance. The simplest test for acid is to soak a piece of cotton candlewicking in the suspected oil and then wrap it around a brightly polished piece of steel shafting, putting it in a place exposed to the sun for a time. If the surfaces covered by the wicking are etched after 24 hours, it is a good indication that the lubricant has some acid in its composition or that there is an alkali present. Obviously, the oil is not suited for ball bearings.

Searching for Acids

The following test is also easily carried out: Procure from any druggist a solution of sodium carbonate in water, equal parts by weight. Take a small quantity of the oil to be tested and an equal amount of the sodium solution. Place them in a bottle or test tube and shake well, allowing the mixture to stand. If there is any acid present it will settle to the bottom as a precipitate and the amount of the deposit will then furnish some indication of the quantity of acid in the oil.

Another test for acid: Dissolve a small quantity, say a teaspoonful of the oil or grease in five or six times its bulk of boiling water and while the oil will not mix with the liquid, any acid present will form a solution with it. A piece of red litmus paper is then placed in the liquid, and if it remains red after soaking for some time there is acid present. If the color of the paper quickly changes to a blue or purple, the oil contains an alkali and if it changes to a pink very gradually the oil is neutral. This test can also be made with a piece of blue litmus paper, which will quickly turn red if any acid is present, though it gradually assumes a purple hue if the oil is neutral. Litmus paper may be obtained from any druggist at small cost.

Acids in Animal Fats

As previously stated, many animal fats contain acid as one of the constituent elements and this substance is generally in grease made from a tallow or filled with some oil of other than mineral derivation. Others are thickened with vegetable oils. To test for either of these in an oil that is represented a pure mineral product, the saponification test may be tried. Place 5 or 6 ounces of the suspected lubricant in a sauce pan and add 1 or 2 ounces of caustic soda or concentrated lye. Boil the mixture for 15 or 20 minutes and set aside to cool. A tablespoonful of common salt thrown into the mixture while it is solidifying will hasten the process in many instances. When cold, examine the compound; if the surface is covered with soap the oil contains animal or vegetable fats, if not, it is a pure mineral substance.

Value of Tests

Many motorists may question the value of such tests and may feel that it is not worth while to make any one of the simple experiments detailed to see if the oil used is at fault. Ball bearings are expensive, however, and as no manufacturer will replace those that have failed because of chemical action caused by water, acids or alkalis, it behooves the motorist to ascertain definitely if the lubricant he is using is suitable for the purpose and not depend upon the word of a more or less interested dealer who may sell inferior oils because of the greater profits which obtain.

Another point the writer wishes to criticize is the common method of cleaning ball bearings in the average motor car repair shop. These are dipped in dirty gasoline in which old gears and other parts have been previously cleansed, and this material is full of metallic particles as soon as it is stirred up enough to disturb the sediment, so instead of having a clean bearing one has filled it with deleterious substances without knowing it. A simple solution of common washing soda and hot water such as used in the shops of the New Department Mfg. Co. for cleaning greasy parts and assembled bearings at the completion of the manufacturing process offers important advantages. This can be easily made by taking about a handful of the soda to the pail of boiling water.

The bearings are placed in a wire basket or hung on a wire and dipped in this a few times to remove all dirt, then they are immersed in clean kerosene and given a swirling motion to have this material thoroughly clear out all traces of the soda. The bearings should not be allowed to remain in the alkaline solution more than a few seconds at the most, and a few dippings are all that is necessary to clean them out thoroughly and cut all the hard and rancid grease or remove any metallic dust present. On examination of used parts, if the bearings are clean, the surfaces bright and there is not too much looseness, they are in good condition.

A good lubricant for bearings is a slush made of pure vaseline and lighter mineral oil, this being heated to make its viscosity less and enable it to penetrate all parts of the bearings, no matter how minute the space. When the bearing has been dipped in this and allowed to remain long enough to permit the oil to reach all parts, it is taken out and allowed to cool, and the surplus lubricant is wiped off the outside. Such a mixture will stay in place, and will not run out like lighter oils and at the same time, its viscosity is not so high that it will produce unnecessary friction.

Legal Lights and Side Lights

ILLINOIS AFTER NEW LAW

THE Chicago Automobile Club is back of senate bill No. 433, drafted by Sidney S. Gorham, chairman of its legislative committee, which now is being considered by the legislature at Springfield. It is proposed to do away with the wheel tax, which is considered an oppressive measure by Chicagoans, and register cars on a horsepower basis, the highest fee being $10, for cars over 50 horsepower. Chauffeurs will have to be examined and the speed limit in the country will be increased to 25 miles an hour.

IOWA BILL MAY BE VETOED

The Dunlap bill to fix the rule of the road which was passed by the Iowa legislature which recently adjourned and which is a big thing for Iowa motorists, may be vetoed by the governor. Although the legislature adjourned 3 weeks ago, Governor Carroll has not yet fixed his signature to the measure. The bill reads: "Whenever any person on horseback or in a vehicle or operating a motor vehicle shall overtake another person on horseback or in a vehicle or operating a motor vehicle, such a person as overtaken shall upon signal or request turn to the right, allowing free passageway on the left, when possible. Failure to comply with the provisions hereof shall make the delinquent liable for all damages resulting therefrom and also liable to a fine in any sum not exceeding $25 and costs of prosecution and shall stand committed to the county jail until such fine and costs are paid, as provided by law."

The bill is mandatory only upon the person overtaken and it places no obligation of care or caution on the overtaking party.

ANOTHER BLOW AT YOUNGSTERS

A drastic ordinance and one which promises some work for the courts was passed by the council of the city of Findlay, Ohio, last week. It provides that no child under the age of 16 years shall be permitted to run or operate any kind of a vehicle on the streets in the business portion of the city. The ordinance is aimed at the young drivers of motor cars and provides for heavy penalties for its violation.

CANADIAN TAXICAB DECISION

That it is not a misdemeanor offence to refuse to pay a taxicab driver the price indicated on the taximeter, provided the passenger makes a reasonable offer for the rental of the car, was the judgment rendered by Judge Bazin of Montreal when Peter Stenhouse, a commercial traveler, was brought before him on a charge of refusing to pay his fare. Mr. Stenhouse engaged a taxicab, and after making use of it for a little more than 3 hours tendered the driver $7.50 in payment. The driver refused the offer and insisted that he should pay $13.75, the amount registered on the meter. As no decision could be arrived at, Mr. Stenhouse was handed over to the police. When the constable appeared before the recorder's court he was astonished to learn that there was no taxicab tariff authorized by the city of Montreal and that the recorder had no jurisdiction. The constable then was recommended to try the police court. As both the recorder's clerks and the clerks in the police court were doubtful as to whether or not the case was a criminal one, no written complaint had been made against the accused. He was taken before Judge Bazin, and after both the chauffeur and the constable had told their stories Judge Bazin ordered that Mr. Stenhouse be released at once. He said that from the fact that Mr. Stenhouse had offered to pay $7.50 he could not be held for refusing to pay his fare, and if the complainants considered they had a case against the accused their only hope lay in the civil courts.

NEBRASKA ROAD LEGISLATION

Although five bills that would have resulted in much better road conditions were introduced into the Nebraska legislature by a special joint good roads committee, and for a time there were indications that all would pass, only one, an optional county organization bill, was passed. Nebraska has no law at all providing for state control, or state participation in road building. It is all left to the counties. The legislature will not meet again for 2 years. It is claimed that it was principally due to the lack of interest on the part of the farmers that the bills were not passed.

This one new law provides for a county road organization. The county board may appoint a highway commissioner, who may be the county surveyor, but who must be a practical road engineer. The board and commissioner are given exclusive authority over the roads of the county. Precinct and township road supervisors shall perform their work under supervision of the board and commissioner.

This law will mean much to the improvement of roads in the county. Previously the precinct and district supervisors had things pretty much their own way, and often work would be done 1 year by one supervisor, and the next year exactly the reverse done by his successor, the result being little uniformity throughout the county, and little proper or systematic work. The commissioner has to report each year as to just what has been accomplished under the new law. Provision is made for the periodic dragging of roads and for keeping weeds out of the roads.

This new law is the first step in the right direction in the counties. But the other laws would have meant much more, as they called for a state highway commissioner and a board in control of roads, and also for state assistance in the building of roads, a state highway being one of the intents of this last bill.

A bridge bill also was passed which called for a levy of a fifth of a mill to aid counties in the construction of bridges. Where a county applies for aid for bridging a river more than 175 feet in width the state will pay half the expense. This law will probably result in the construction of another bridge over the Platte, making a better and shorter route between Omaha and Lincoln, the two largest cities in the state.

The new motor law provides that the license fees shall go into the good roads funds of the counties in which the owner resides. Previously these went into the state treasury, so that this will mean so much more for good roads in the state. The fees probably will total between $35,000 and $40,000 next year.

THE CANADIAN TAX

The police authorities of Montreal are after motorists who have not as yet complied with the law regarding the taxes on motor cars which have been due since April 1. Under the new regulations, in place of a tax of $5 per year the government has abolished that and instituted instead a tax of $5 per year, with an additional tax graduated according to the power of the machines. This amounts to $5 for cars up to 25 horsepower; $10 from 25 to 35 horsepower; $15 from 35 to 50 horsepower, and $20 for over 50. It is estimated that these fees will net the government about $50,000 in the province of Quebec, and, as the government has promised to use all this money for the purpose of improving the roads, it is expected that that section of the newly proposed international highway from Quebec to Rouse's Point will be a thing of the near future.

NEW ANGLE ON LIGHTS

E. B. Reingwald, a contractor of Circleville, Ohio, who was arrested in Columbus recently on the charge of leaving his car stand on the public street without the necessary lights, will fight the case in the courts. Reingwald claims that since the car was not in operation and left standing it was not necessary to have the lights as provided by law. He cites the law which says the lights must shed a light a certain number of feet in the direction the car is progressing.

CHANGE of Name—The National Brake and Clutch Co. of Boston has changed its name to the Cork Insert Co.

One Magneto Used—When the Blitzen Benz first was raced in this country it was fitted with two magnetos, but when Burman smashed the records at Daytona the ignition was supplied by one Remy magneto.

Bennett Made a Director—The vacancy in the board of directors of the Willys Overland Co. caused by the resignation of W. H. Brown, of Indianapolis, has been filled by the election of George W. Bennett, general sales and advertising manager of the company, to the office.

Henshaw Moved to New York—Manager Charles S. Henshaw, of the Boston branch of the E. R. Thomas Motor Co., has been promoted to the New York branch, where he succeeds W. B. Hurlburt. Henshaw has handled the Thomas off and on for a number of years and he has also sold the Haynes cars in Boston.

Gives Up Plant—The Silent Sioux Motor Mfg. Co., which established its plant in Milwaukee, Wis., about 18 months ago, has abandoned the plant and the machinery and equipment have been moved from the city. The company moved from Sioux Falls, S. D., to Waukesha, Wis., about 3 years ago and later removed to Milwaukee. Part of the works are now occupied by H. A. Keech & Co. as a garage. The building formerly was the main garage of the Jonas Automobile Co., Cadillac and Peerless representative, and is situated at 722-726 National avenue.

Increasing Packard Truck Plant—In an effort to keep up with the demand for trucks the directors of the Packard Motor Car Co., of Detroit, have authorized new construction which will practically triple the capacity of the truck shops. By distributing parts of the work to other portions of the plant the company has been able to produce three trucks a day. The increase in facilities will give the truck shops proper a normal capacity of five trucks a day, which is needed to keep up with orders at the present rate. The directors have also provided for an addition to the foundry which means an increase of 9,695 square feet of floor space for this department and have made arrangements for building an additional floor on each of the two service buildings. The total floor space comprehended in the new construction is 160,295 square feet, which, added to the present plant, will increase the floor space of the Packard shops to 37 acres. The ground occupied by the Packard factory is three-quarters of a mile in length. The company has decided to make public service vehicles a part of its standard output. Hitherto, individual orders have been taken care of under the classification of special construction.

Corbin Moves to Detroit—Arthur E. Corbin, formerly manager of the truck department of the Packard Motor Car Co. of New York, has assumed his new position as assistant sales manager of the Packard Motor Car Co. of Detroit.

Heller Makes a Change—Thomas Heller, who for the past 8 years has been sales manager of the Standard Roller Bearing Co., of Philadelphia, has severed his connections with that company and has become financially interested in the Atlas Steel Bearing Co. and the Fay Machine Tool Co., both of Philadelphia. He is vice-president of the former company and sales manager of the latter.

Duryea Selects Saginaw—Another motor car factory was added to Saginaw, Mich., this week, when the Duryea Auto Co., of Reading, Pa., signed a contract to locate in this city, erect a $300,000 plant and employ 100 skilled laborers at the start, with the possibility that 1,000 cars will be turned out in 1912. The concern will begin operations July 1 and will occupy 6 acres of land and buildings 200 by 400 feet. Charles E. Duryea is president and Joseph Seeman, of Saginaw, will be secretary and treasurer.

Southern Plant For Kline—Application has been made to the state corporation commission of Virginia for a charter for the Kline Motor Car Corporation, with a capital of $500,000, which will manufacture the Klinekar in Richmond. The officers of the company are as follows: President, S. E. Bailey, of Philadelphia; vice-president and treasurer, Samuel W. Meek, of Richmond; secretary, D. R. Midyette, of Richmond. The board of directors are: S. E. Bailey, Philadelphia; James A. Kline, York, Pa.; Warner Moore, T. S. Winston, H. D. Eichelberger, D. R. Midyette, S. W. Meeks, W. B. West, William H. Swartschild, Emmett Seaton, W. H. Warren and W. F. Gordon, of Richmond. The plant will be in readiness for operation by September 1, of this year. It is estimated that the plant will cost about $150,000 and will employ from 500 to 1,000 skilled mechanics. The manufacturing building will be rectangular—400 by 60 feet—and will be two stories high. As under the present management of the York, Pa., concern, the cars turned out in Richmond will range from a four-cylinder 30-horsepower roadster to a six-cylinder 60-horsepower car, including also a heavy truck. The capacity of the establishment, it is estimated, will be annually 2,500 cars of the various types. Mr. Kline will be engineer and general manager and S. W. Meeks will for the most part have charge of its business affairs. The establishment of the enlarged plant in Richmond will in no way affect the continuance of the operation of the plant at York, Pa., now owned by the Kline Motor Car Corporation, but the York plant will be continued.

Childs Given More To Do—C. D. Childs, who for the last 5 years has been cashier of the Buick Motor Co., has been appointed by the directorate of the General Motors Co. as controller of the Champion Ignition Co., the Michigan Motor Castings Co., the Oak Park Power Co., the Randolph Motor Truck Co., the Marquette Motor Co., and the Jackson-Church Co.

Avery Plant Moved—The Avery Portable Lighting Co., which manufacture Electrobola lamps, has moved from its old location at 461 Broadway, Milwaukee, to the new fireproof reinforced concrete Stroh building, located at Jackson and Michigan streets. Owing to the increased business and lack of space and facility in the old quarters, it was necessary for the company to get larger space.

Wine Set Given Reeves—As a token of esteem and appreciation, his associates at the headquarters of the Association of Licensed Automobile Manufacturers presented Alfred Reeves with a silver wine service upon resigning the office of general manager of that organization to join with the United States Motor Co. as its general sales manager. The presentation took place on Saturday, and on Monday Mr. Reeves took up his work with the United States Motor Co.

Changes at Cass Plant—A. W. French, formerly sales manager for the Rapid Truck Co., has accepted the position of sales manager for the Cass Motor Truck Co. John Younger, who has been in charge of the mechanical end of the Cass plant, has been promoted to the position of general factory superintendent. A. M. Spater, who has resigned as sales manager, secretary and treasurer, will be succeeded by H. B. Hoyt.

Garford Increases Stock—The Garford Co., of Elyria, O., whose principal is the manufacture of trucks, pleasure cars and municipal public service wagons, has increased its capital stock from $650,000 to $2,000,000. The new stock consists of $500,000 in preferred and $850,000 of common. The common stock will be paid for out of the surplus fund, which now amounts to $950,000. The preferred stock will be placed on the market. For the manufacture of trucks and municipal service wagons the company has just completed the erection of a three-story factory building, 150 by 80 feet.

Brief Business Announcements

BOSTON, Mass.—Manager M. H. Bates of the Jackson agency has added W. G. Tenney to his sales force.

New York—The Times Square Automobile Co. has removed to 1708 to 1718 Broadway, at Fifty-fourth street.

Columbus, O.—The L. P. Birkenbach Co. has opened a supply store in Columbus and intend to enter the jobbing business this fall.

Seattle, Wash.—Fred M. Powell, of the Automobile Exchange, has recently become sole distributor for the state of Washington for the Mercer.

Chicago—Charles F. Van Sicklen, formerly assistant sales manager of the Fal Motor Co., now is connected with the Chicago Ford branch.

Washington, D. C.—Earle & Allen have opened a sales room and garage at 1610 Fourteenth street, N. W., and will handle the Hupp-Yeats electric.

Boston, Mass.—The Carpenter garage on Corey road, Brookline, is now handling the Chadwick car and the Columbus electric in and about Boston.

Hutchinson, Kan.—The Auto Supply Co. is open for business, carrying a line of supplies. A. J. Jackson will have the management of this concern.

Pittsburg, Pa.—The Lorena Oil Co., of Pittsburg, has leased 60 by 100 feet in Grant boulevard, near Craig street, and will erect a fireproof building for the storage of oil.

Philadelphia, Pa.—S. H. Faigley, formerly sales manager for the Pitner Pump Co., has allied himself with the Gibney forces, which make the Gibney Eleck-Trick vulcanizer.

Denver, Colo.—R. A. Creek is representing the C. W. Kelsey Mfg. Co. as distributor for Motorettes throughout the Rocky mountain district. Mr. Creek will make his headquarters at Denver.

St. Louis, Mo.—The Kissel Motor Car Co. will establish a branch at St. Louis, and a new building is being specially designed for the purpose. The St. Louis territory will be under the direct charge of A. L. Curtis.

Hartford, Conn.—R. A. Shearer, formerly connected with the Twentieth Century Mfg. Co., has joined the force of the C. W. Kelsey Mfg. Co. in the capacity of traveling representative. Mr. Shearer will travel throughout the south.

Milwaukee, Wis.—The Akin Motor Car Co., 134-136 Oneida street, representing the Stevens-Duryea, has retired from business. William A. Akin, proprietor of the agency, plans to take a long rest. The Milwaukee territory will be handled by the Chicago branch under a new arrangement recently effective.

NEW FACTORY OF THE R. E. HARDY CO. IN CHICAGO

Chicopee Falls, Mass.—The Fisk Rubber Co. has opened a new branch at Fresno, Cal., in charge of R. D. Macphail. It is located at 1362-4 I street.

New York—C. S. Gibson, formerly with the Stromberg company, has been appointed eastern distributor of the Vortex vaporizer, with offices at Sixty-third street and Broadway.

Sistersville, W. Va.—The Tyler Motor Co., of Sistersville, capital $5,000, has been formed by L. H. Talbot, W. E. West, E. A. and George F. Durham, and H. W. McCoy, to do a general garage business.

Milwaukee, Wis.—Walter A. Anger, superintendent of the Silent Sioux Auto Mfg. Co. until its removal from Milwaukee a short time ago, has opened a garage and repair shop at 301-306 Sixteenth street, Milwaukee.

Portland, Ore.—E. S. Brackett, who has been secretary of the White Motor Car Co. of Portland since its organization 2 years ago, has resigned, and has left for San Francisco, where he will be connected with the White Motor Co.

Philadelphia, Pa.—A branch of the R. C. H. Sales Co., of Detroit, has been opened at 330 North Broad street, for representation in Philadelphia and adjacent territory of the Hupp-Yeats electric. E. N. Stimson is local manager.

Sioux City, Ia.—The Cutting Motor Co. has opened a city salesroom in the building at 512-514 Douglas street. Cutting cars exclusively will be handled. E. L. Dealy, of LeMars, Ia., general agent for the Cutting cars, opened the agency, and P. J. Conway and W. A. Kifer will be managers of the local office.

St. Louis, Mo.—The St. Louis Automobile and Engine Co. has been organized with a capital stock, fully paid, of $50,000. The incorporators are W. D. Williams, F. Kiene and Frank H. Baden.

St. Louis, Mo.—St. Louis capital is being interested in the organization of the Schenk Pneumatic Wheel Co. The device is to be placed on the market as soon as the company is formally organized and a plant secured.

Toledo, O.—The Ray-Kuhn Co. has been incorporated with a capital of $25,000 to manufacture and sell motor cars, accessories and appliances. The incorporators are J. Paul Ray, B. S. Kuhn, Herman F. Wither, Elizabeth K. Ray and E. C. Wither.

Cincinnati, O.—The Ideal Wheel Co. has been incorporated with a capital of $25,000 to manufacture wooden and metal wheels for motor cars and other vehicles. The incorporators are Louis M. Rouda, B. L. Mattox, Victor E. Julien, George Paul Will and Michael Kuhn, Jr.

Milwaukee, Wis.—The O. L. Schaeffer Automobile Co. has been appointed district agent for the Imperial, Richmond and Krit cars by the LaCrosse Plow Co., state agent. The Schaeffer company is now erecting a large garage and sales room at 887-889 Twenty-third street.

Charleroi, Pa.—The stockholders of the Charleroi Foundry and Machine Co. have voted to rebuild their plant at Charleroi, which was burned December 16 last. A garage will be constructed and the Hupmobile and the Jackson cars handled, as before. J. F. Doneghy is president and

general manager of the company; P. G. Wallager is vice-president and treasurer, and John E. Doneghy is secretary.

Mason City, Ia.—Jack McAvoy, formerly with the London Auto Supply Co., now is with the Colby Motor Co. as a traveling salesman.

Baltimore, Md.—The Century Tire Co. has opened a branch office in Baltimore, with Albert R. Qualey as manager. The branch is located at 1200 Mount Royal avenue.

Bristol, Conn.—The New Departure Mfg. Co., of Bristol, Conn., makers of New Departure ball bearings, is enlarging its corps of engineers. Victor E. Page, of Pawtucket, R. I., is the latest recruit.

Atlanta, Ga.—The Firestone Tire and Rubber Co. has opened a new direct factory branch in Atlanta at 58 Auburn avenue. It is in charge of Wylie F. West, who has been transferred from the St. Louis branch.

Chicago—The R. E. Hardy Co., of Chicago, announces its removal from 1735 Michigan avenue to its new plant at Austin avenue and May street. Additional automatic screw machines are installed, which will enable the company to triple its output.

New York—The Fiat Automobile Co. has moved into its new salesroom at Broadway and Fifty-seventh street. The new Fiat location is at the northeast corner and is only a couple of doors south of the salesroom occupied by the firm for the last 3 years.

Toledo, O.—The electric department of the Toledo Auto and Garage Co., now devoted entirely to the storage and charging of electrics, will hereafter be known as the Ohio Electric Garage. Special selling arrangement has been made with the Ohio Electric Garage, but the Blevins Auto Sales Co., state agent, retains the selling rights in Toledo.

St. Louis, Mo.—The Automatic Tire Co. has been incorporated in St. Louis, with a fully paid capital of $25,000, to manufacture and deal in tires.

Milwaukee, Wis.—A Milwaukee branch has been established for the Garford line of cars and trucks at 176-178 Thirteenth street by Orrin R. Hughes, of Marshfield, Wis., state agent. Charles R. Lesher has been appointed manager at Milwaukee.

Cleveland, O.—The Cleveland Storage Battery Co. has been incorporated with a capital of $10,000 to manufacture, charge and repair electric storage batteries and to rebuild vehicles propelled by electricity or other motive power. The incorporators are Herbert H. Jones, H. G. W. Stoltzenberg, B. L. Jones, H. E. Elliott and Paul L. Jones.

Recent Incorporations

New York—Eckerson Motor and Carriage Works, capital stock $25,000; to manufacture motor cars, carriages, etc.; incorporators, G. D. Eckerson, D. G. Moore, H. M. Bertody and C. R. Neidlinger.

Trenton, N. J.—Bo Rose Mfg. Co., capital stock $50,000; incorporators, G. W. Everett, N. E. Wiggins and M. C. Duane.

Trenton, N. J.—American Automatic Service Co., capital stock $600,000.

Philadelphia, Pa.—Overland Washington Motor Co., capital stock $10,000; incorporators, R. C. Smith, C. ... Whitt and E. Smith.

Cincinnati, Ohio—Citizens' Motor Car Co., capital stock $1,000; incorporators, W. C. Bennett, F. West and J. H. Dean.

New York—Only Motor Car Co., capital stock $500,000; incorporators, F. W. Edwardy, F. Seymour and H. N. Dikeman.

New York—Brown Auto Tube Sales Co., capital stock $300,000; to manufacture tube, motor car tires, etc.; incorporators, J. B. Roberts, E. B. Goater and L. D. Foreman.

Albany, N. Y.—Ewing American Motor Co., capital stock $1,500,000; incorporators, C. A. Hamlin, A. P. Anderson and W. W. Bender.

Brooklyn, N. Y.—Powell Garage Co., capital stock $25,000; to repair, store and deal in motor cars; incorporators, F. M. Powell, M. Mayor and L. M. Christian.

Brooklyn, N. Y.—Brown Auto Parts Co., capital stock $15,000; directors, H. M. Sachs, N. Zinn and S. E. Schuchart.

Columbus, O.—C. Roy Clough has succeeded Nelson J. Ruggles as manager of the motor car department of the Early Motor Car Co.

Bourne, Mass.—M. C. Waterhouse & Son, of Bourne, have taken the agency for the Velie on Cape Cod on the very easternmost tip of the cape.

Milwaukee, Wis. — Frank M. Lee has been appointed manager of the new Milwaukee branch of the Fisk Rubber Co., at 448 Milwaukee street.

Hagerstown, Md.—W. P. Grove has bought out the interests of his partner, Eugene Bready, in the Jefferson garage, handling the Hupmobile, Regal and Chalmers.

St. Louis, Mo.—The Continental Motor Equipment Co., with a capital stock of $25,000, fully paid, has been incorporated to buy, sell and deal in motor cars. Noble H. Davis, John Shuford and H. S. Gilbert are the incorporators.

St. Louis, Mo.—To engage in a general business of hauling and delivering merchandise, the Motor Wagon Delivery Co. has been formed in St. Louis, with John M. James and Harry C. White as the principal stockholders. The capital, paid up, is $6,500.

Eau Claire, Wis.—The Tanberg Auto Co. formally opened its new garage with a public reception last week. The garage is one of the largest in the northwest and cost about $50,000. The company is a large northwestern agent for the Buick and other lines.

Baltimore, Md.—W. P. Shuler has become connected with the D. C. Walker Auto Co., local representative for the Flanders, Garford and E-M-F pleasure cars and the Grabowsky trucks. Mr. Shuler was formerly representative here for the Mitchell car.

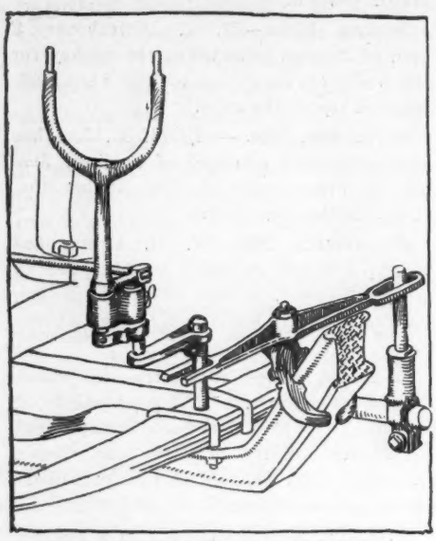
Cincinnati, O. — Instead of becoming field manager for the Franklin Automobile Co. H. T. Boulden, who has been the Cincinnati agent for the Franklin for many years, will take up his new duties as sales manager of the Ohio Motor Car Co., of Elmwood, Cincinnati.

Sewickley, Pa.—David C. Anderson, formerly president of the Anderson Automobile Co., of Sewickley, has disposed of his holdings in that company and will retire from the business. His brother, Robert L. Anderson, will take over his interest and will be secretary and treasurer of the company.

Cleveland, O. — The Westman Motor Truck Co. has been incorporated with an authorized capital of $200,000 to manufacture, buy, sell and trade in motor trucks and accessories. The incorporators are George A. Weisman, L. A. Westman, C. E. Jennings, George E. Karl and William H. Westman.

STORE OF FREELAND BROTHERS IN OMAHA

Development Briefs



ROTANTE HEADLIGHT BRACKET

Snap-on Tire Chain

THE snap-on tire chain is an individual cross chain which can be attached around the tire at each spoke or, if fewer are needed, at every second spoke or every third spoke. It consists of an ordinary link cross chain which unites at each end with a semi-circular clamp fitting around the spoke of the wheel. The adjusting part of the clamp consists of a hinged bolt with a wing nut. This bolt being hinged to one-half of the clip which is carried on one end of the chain and at the opposite end enters a slot in the other half of the clip, so that all that is necessary to do in putting it on is to tighten the wing nut. Snap-On Tire Chain Co., Baltimore, Md.

Oneita Electric Horn

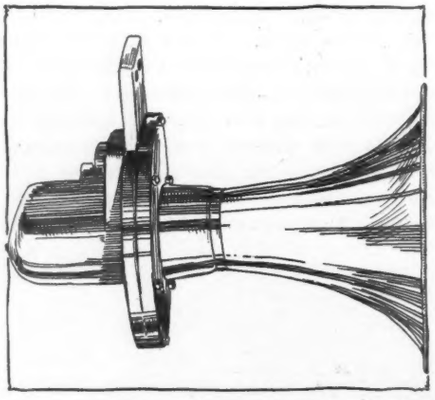
The Oneita electric horn is one of the electro-magnet types in which the diaphragm, which produces the sound, is vibrated by an electro-magnet. The diaphragm is operated by a vibrator which is placed between the electro-magnet and the diaphragm. The physical construction of the horn part consists of a projector made of heavy-gauge spun brass. Electric Horn & Specialty Co., Utica, N. Y.

Rotante Headlight Brackets

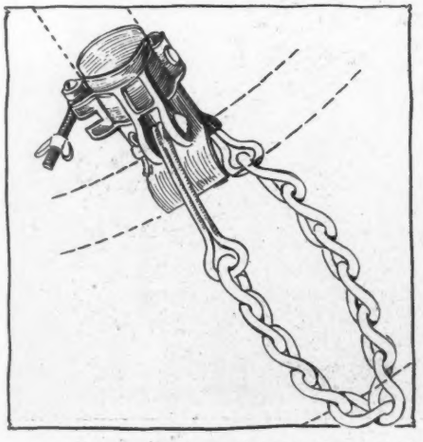
The Rotante swinging headlight bracket is made to swing headlights to the right or left with the front wheels when turning a corner. The bracket can be fitted to cars in which the tie rod between the steering knuckles is either in front of or behind the axle. The brackets are adjustable and designed to fit any car without drilling the frame or other parts. The complete attachment is by means of clamps. The bracket directly supporting the headlight is clamped to the side member of the frame. To the front axle is secured another clamp and to the tie rod is still another one. As illustrated, the tie rod is the source of the lamp movement; as it moves to the right or left it swings the lever L which through the shorter lever LI swings the lamps. A. G. Cerda, Boston, Mass.

The Osgood Lubricator

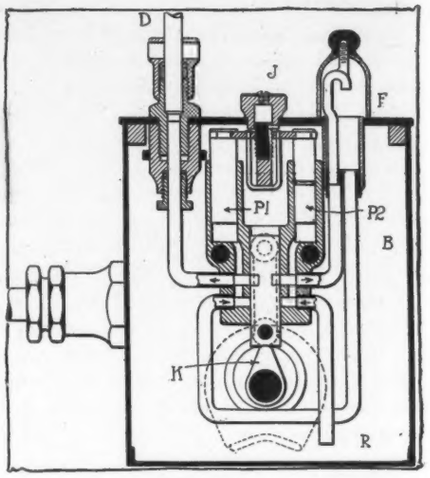
The J. L. Osgood Lubricator Co., Buffalo, N. Y., has announced its 1911 models of its mechanical lubricator for use on motor cars. Fig. 1 shows a vertical end section of this lubricator, showing one of the pumps in section, there being one pump for each oil lead. Each pump consists of a body part B and two pistons P1 and P2. The body is raised or lowered and the pistons remain idle, this being somewhat of a paradox in the pump field. The piston P2 draws its supply of oil from the reservoir R and delivers it on the down stroke through the sight feed R, and the piston P1 takes its supply from the sight feed and delivers it through the discharge passage D to the bearing. By means of the regulating head J the length of the operative stroke can be varied and the amount of oil in the pump regulated as may be required by the needs of the motor at any time.



ONEITA ELECTRIC HORN



SNAP-ON TIRE CHAIN



OSGOOD MECHANICAL OILER

New Paint Preparation

Flexible Compound is a material which has recently been put on the market to be used in conjuuction with painting and varnishing motor car bodies and chassis parts with the object of eliminating checking and cracking of the body colors and the varnishes. This material is a raw oil embodying turpentine and varnish gums, together with one or two other products known as the material for the secret formula, and it is claimed that each and all of these materiais have been treated by a cooking process to eliminate certain ingredients which would tend to cause checking or cracking. It is claimed that every trace of moisture is removed from the oil as well as a majority of the properties of turpentine which cause quick evaporation. It is further claimed that water in the oil and the evaporating qualities in the turpentine assist in causing porousness in the finish film of paints or varnishes and which go to make up a finished product. With these materials eliminated Flexible Compound is a liquid garnet in color and about the weight of raw oil. It is claimed to be rust, acid and water proof, as well as flexible and non-porous, thereby forming a film which is impervious to all actions which would tend to cause failures as are met with in paints, oils and varnishes.

Flexible Compound is claimed to produce a flexible filler for wood bodies as well as a primer for metal bodies. In use it is added to the body and finishing varnishes and mixed and applied by them. The material is said to withstand temperatures up to 800 degrees Fahrenheit without burning, which makes it suitable for cylinder castings, exhaust manifolds, etc.